

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Introduction to Course and Safety

LEARNING:

OBJECTIVE: Action: The student will become familiar with the policies, regulations, fratricide, and computer security. The student will also become familiar with the different equipment they will be taught in this course.

Conditions: Given an AN/TYC-39A, Central, Message Switching, Automatic.

Standard: The standard is met when the student has become familiar with equipment, policies, and regulations.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Student Class and Break Schedule, List of Class Leader Duties, List of Student Responsibilities, USASC&FG Regulation 350-5, Published Course Policies, and Student Spot Critique Program

METHOD OF

INSTRUCTION: Conference

TIME: 2.0 Hour

260-ASIZ2\A01-LP1

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
2. Ensure all safety procedures are followed.

INTRODUCTION:

Elapsed

Time

1. The beginning of this new phase of your training will start with becoming aware of the policies and procedures applicable to you during your academic training at Fort Gordon, Georgia. More specifically, in the Automatic Message Switching Center Operations AN/TYC-39(A) Course. Any deviations or changes will be handled on an individual basis and coordinated with higher authority.
2. Let's begin our study by discussing the title, length of course, and chain of command as it applies to the 260-ASIZ2 course.

BODY:

1. Title, ASI Identifier, length of course, and chain of command.
 - a. Automatic Message Switching Central AN/TYC-39(A).
 - b. 260-ASIZ2 awarded to 74C MOS holders.
 - c. 6 weeks, 1 days.
 - d. Academic Chain of Command
 - (1) Group leader.
 - (2) Instructor.
 - (3) CMB NCOIC/Chief.
 - (4) NSS NCOIC/Chief.
 - (5) ACD NCOIC/Chief.
 - e. Use your unit chain of command for problems associated with your company cadre. See your group leader for this chain.

QUESTION: What is the correct title of the 260-ASIZ2 course? (ANS: The 260-ASIZ2 course is

called the "Automatic Message Switching
Central AN/TYC-39(A).)

5M

2. Regulations, policies, and procedures.

- a. USASC&FG Regulation 350-5, Training Academic Practices, prescribes academic practices to be followed by instructor and student personnel in the U.S. Army Signal Center and Fort Gordon courses of instruction.
 - (1) Class/Group leader - One person in class designated to assist in control of all students, usually the ranking military.
 - (2) Assistant Class/Group leader - The second senior student appointed to assist the class leader in the control of students with his section.
 - (3) Classroom instructions - Group-paced with maximum emphasis on equipment oriented training.
- b. Equipment training will be two-person team oriented.
- c. Student classifications.
 - (1) Holdover - Graduates who are available to move but have no assignment, port call instructions or cannot move to next station for other reasons.
 - (2) Category X - removed from training for three or more days in one of the following categories:
 - (a) Reclassification.
 - (b) Pending discharge/departure.
 - (c) Absent without leave.
 - (d) Medical.
 - (e) Confinement.
 - (f) Pending court martial/UCMJ.
 - (g) Security investigation.
 - (h) Leave.
 - (i) Other.
- d. Academic control of students.

- (1) Instructor will assign specific positions for conference and practical exercises.
- (2) Students will not bring into secure area any weapons, explosives, intoxicants, medicine (other than prescriptions), cameras, musical instruments, newspapers, books, magazines or consumable items unless cleared by the instructor.
- (3) During classes students will maintain an alert, attentive attitude.
- (4) During tests or examinations, students will not give assistance to or accept assistance from any source other than the instructor. Infractions will be punishable by UCMJ. A grade of 70 must be attained for all performance tests, otherwise academic assistance and remedial training will be scheduled before or after normal training hours. Coordination with the company will be accomplished by the instructor.
- (5) Fort Gordon has a no-smoking policy for students.
- (6) All students will be required to perform police and housekeeping detail in academic areas, equipment, and buildings as designated by the branch NCOIC.
- (7) In the event of an excused absence from class, the student will make attempt to rejoin his class at the earliest possible time. In all cases, the student must return from the company with a properly annotated buck slip, FG Form 6436 (student excused absence slip). All absences should be kept to a minimum. Makeup instruction for individual students will not be allowed to interrupt or delay progress of the class. Inform group leader and instructor in advance if at all possible of projected absences.
- (8) No passes or leaves will be approved by the branch. Emergency/Compassionate leaves will be coordinated with the company.

- (9) A weekly counseling session will be conducted by the instructor with each student to determine if any problems exist, academic or personal and to let the student know of his academic performance level. Proper remarks will be made on the student training folder.
- (10) Be familiar with Fort Gordon Regulation 600-9, Fraternization Policy. Instructors are prohibited from the use of their rank or position to intimidate or gain advantage of a student for personal gain, sexual gratification, etc., regardless of the knowledge or consent of the student involved. Instructors will not use vulgar, profane, obscene, humiliating, racially or ethnically slanted language or gestures, nor engage in fraternization with students. Instructors may touch trainees for the purpose of teaching proper task performance. Students should also demonstrate exemplary conduct when interacting with instructors and fellow students.

e. Testing procedures.

- (1) Each annex will conclude with a written and performance exam.
- (2) On the written and performance exam a 70% or higher score is required to pass. Performance exams are recorded as GO/NO-GO but a point system is used to enable course to determine honor graduates.
- (3) If a student fails any portion of an exam he will be given a minimum of 2 hours remedial/academic assistance and will be retested.
- (4) If a student fails retest he may be recommended for turnback to later class, dismissal from the course, or discharge from the Army. Any sister service members will be subject to their regulations/rules.

f. Student discipline and incentives.

- (1) Rule infractions/test failures will be reported on DA Form 4856 General Counseling Form.
- (2) Honor graduates may be selected from the class. A distinguished graduate can be selected if a student has the highest average but not less than 95% average in the course. Honor graduates can be selected if class is large enough (must not exceed the top 20 percent of class enrollment). The honor graduate must maintain an average of 90% or higher. Neither may have any derogatory reports from the academic/unit such as negative counseling statements/article 15s etc. Cannot have any PT failures or overweight conditions. May not have any "NO-GO"s on any test. Must meet physical/weight standards.
- (3) Upon completion of the course each active army soldier E4 and above and all National Guard/Reservists members will receive a completed DA Form 1059 Service School Academic Evaluation. This will cover academic and military performance.

g. Security.

During presentation of classes communications security on COMSEC equipment, no notes will be taken and all material must be accounted for prior to dismissal of class.

h. Classroom academic hours.

Classroom hours may vary as they are dependent upon student input. Refer to posted room schedule.

i. Student spot critique program

- (1) Designed to allow the student to recommend constructive changes to program of instructions or operational procedures in the course.

- (2) Can be used to report any actual or suspected impropriety by cadre, staff, or instructor personnel.
- (3) Not to be used as a method of praise for outstanding performance of duty of individuals as this is reserved for the end-of-course critique.
- (4) This procedure should only be used in unusual situations and does not constitute an every day exception to using your normal chain of command.
- (5) Student completes form provided, folds, staples, and delivers to Branch NCOIC/Chief, Computer Maintenance Branch. The Branch will ensure unopened critique is delivered to the Director, ACD, ATTN: SGM or Chief, TSD within 1 duty day. Instructors or supervisory personnel are not authorized to open or read spot critiques.
- (6) Students will receive replies if the form has been signed. Spot critiques will be answered within 1 week, either in writing or in person, by SGM or Chief, TSD, ACD.

j. Safety - A subject of utmost importance.

- (1) Operators in performance of their normal duties are exposed to many potentially dangerous conditions and situations.
- (2) Dangers can be minimized by taking proper precautions and practicing the basic rules of safety.
- (3) Basic safety rules and procedures as may apply to each individual work or duty position, are as follows:
 - (a) Report any conditions of equipment or material which may be considered unsafe.
 - (b) Warn others whom you believe to be endangered by known hazards.
 - (c) Wear or use available protective clothing or equipment of the type approved for safe performance of work or duty.

- (d) Report any injury or evidence of impaired health occurring in the course of work or duty.
 - (e) In the event of any unforeseen hazardous occurrence, exercise reasonable caution appropriate to the situation.
- k. Specific electrical safety precautions are normally contained in instructions or operator technical manuals and includes, but not limited to:
 - (1) Effects of electrical shock.
 - (2) General safety precautions.
 - (3) High-voltage safety precautions.
 - (4) Grounding of equipment.
 - (5) Battery safety precautions.
 - (6) Precautions with chemicals (explosive and toxic vapors).
 - (7) Fire fighting/electrical fires.
 - (8) First aid treatment.

NOTE: Have students and class leader read and sign responsibility memo. Insert copy into class/student record book.

1H 58M

SUMMARY:

1. You now have an understanding of the policies and rules you must follow while a student in the ASIZ2 course.
2. Again, welcome to the 260-ASIZ2 course. During the next 6 weeks, 1 day you will be required to work very hard in order to learn the operation of the message switch AN/TYC-39(A). All the help you will need will be provided. Always practice safety ... your life may depend upon it!

2H

This document supports all tasks selected for training.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Introduction to the AN/TYC-39(A)

LEARNING

OBJECTIVE: ACTION: The student will identify components and equipment groups of the AN/TYC-39(A) and answer written questions about the AN/TYC-39(A).

CONDITIONS: The students are given an operational AN/TYC-39(A), TM 11-5809-790-12-1, and practical exercise 260-ASIZ2/A01-LP2-PE.

STANDARD: Acceptable performance is achieved when the students correctly identify the components of the AN/TYC-39(A) and their equipment groups within 30 minutes. In part two, acceptable performance is achieved when the student correctly answers 14 of 20 written questions within 30 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM 11-5809-790-12-1 through TM 11-5809-790-12-6, NAM-24/TSEC, Practical Exercise, Overhead Projector, and Slides

METHODS OF

260-ASIZ2\A01-LP2

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

INSTRUCTION: Conference, Practical Exercise

TIME: 8 hours

NOTES TO INSTRUCTOR:

1. Ensure that all training resources are available.
2. Ensure that safety procedures and practices are followed.
3. Evaluate students on their ability to perform the learning objective during the practical exercise.

INTRODUCTION:

- Elapsed Time
1. The AN/TYC-39A) Automatic Message Switching Central was the first in a family of tactical communications equipment of the joint tactical communications system program (TRI-TAC) developed to meet faster and more efficient data communications in a tactical environment. As it will interface with TRI-TAC and Mobile Subscriber equipment the AN/TYC-39A) provides for interoperability within the Army, Air Force, and Navy Forces and with allied countries. It provides JANAP and ACP standardization communications formats which are used across all branches of service and greatly enhances the processing of record data communications throughout the services.
 2. This lesson will teach you the skills, knowledge, and procedures necessary for you to locate and identify components of the AN/TYC-39A).

3M

BODY:

1. Automatic Message Switching Central AN/TYC-39A).

NOTE: Show Slide 1. Refer students to TM-11-5805-790-12-1, paragraph 1-8 and 1-9.

- a. AN/TYC-39A) - mobile, automatic, modular, electronic, store and forward switch under processor control with integral COMSEC and multiplex equipment. Provides automatic message switching communication system

- (configuration) for the automatic store and forward of record data communications.
- b. Housed in a modified S-280 B/G electrical equipment shelter that is normally installed and transported on the back of a 5-ton truck. It can also be placed on a semi-fixed or fixed site such as on the ground or in a building.
 - c. Normally co-located with PLL van (Prescribed Load list/Parts) and Maintenance van.
 - d. Equipment is installed in modular racks which are secured to walls, floor, ceiling.
 - e. In various modes of operation, the message switch can interface with various line types with both dedicated and switched data lines or trunks. These interfaces utilize AN/TYC-39(A) hardware and software components and capabilities.

QUESTION: What is the purpose of the AN/TYC-39(A)?

(ANS: The AN/TYC-39(A) provides a transportable (tactical) automatic message switching communications system (configuration) for the automatic store and forward of record communications.)

2. Technical characteristics.

NOTE: Refer students to TM 11-5805-790-12-1, paragraph 1-13.

- a. Power requirements.
 - (1) Input voltage 115/208 volts, 3-phase AC 50/60 Hz or 400 Hz. Use of 400 Hz requires modification of input circuitry (used by Air Force).
 - (2) Alternate backup supply (batteries); maximum 15-minute operation only.
 - (3) Power consumption 11 kw at 115/208 VAC prime power.
- b. Terminal capacity.
 - (1) Maximum number of subscriber/trunk lines - 48.

- (2) Maximum digital transmission group (DTG) data subscriber trunks between MS and Circuit Switch (CS) - 35. Passes data traffic through circuit switch voice network. One more channel is used for signaling between MS and CS - 36 channels total.
- (3) Maximum analog simple data interface subscribers 7 (older interface; rarely used).
- (4) Maximum dedicated loop or trunk subscribers - 48.
- (5) Maximum Type I modem terminals installable - 48.
- (6) Maximum Type II modem terminations installable - 48.
- (7) Maximum diphase modem terminations installable - 48.
- (8) Maximum digital line terminations for Types I, II, and III lines installable - 48.

c. Terminal line types - Defines groups for TRITAC equipment interoperability. These are grouped by transmission, format and format characteristics.

NOTE: Refer students to TM 11-5805-790-12-1, paragraph 1-13(c). If students have questions about Asynchronous/Synchronous interfaces, refer them to information booklet 5, Chapter Seven for reading assignment.

- (1) TRI-TAC line Type I - Async; Baud; 7/8 bit.
- (2) TRI-TAC line Type II - Async; ASCII; 10/11 bit.
- (3) TRI-TAC line Type III - Synch; ASCII; 8 bit.
- (4) TRI-TAC line Type IV - Sync; ASCII; 8 bit. Supports data adapter functions.

d. Circuit modes.

The AN/TYC-39(A) can operate with any of the five subscriber terminal circuit modes. These modes define the circuit operational protocols.

- (a) AUTODIN Mode I - Full duplex; synchronous; automatic error and channel control.
- (b) AUTODIN Mode II - Full duplex; asynchronous; no automatic error and channel control.
- (c) AUTODIN Mode IV - Simplex; asynchronous; no automatic error and channel control.
- (d) AUTODIN Mode V - full duplex; asynchronous; limited error and channel control.
- (e) AUTODIN Mode VI - full duplex; synchronous, automatic, data adapter control mode available.
- (f) TRI-TAC line types I and II - supports Mode II, IV, and V.
- (g) TRI-TAC line type III - supports Mode I.
- (h) TRI-TAC line type IV - supports Mode I and VI.

e. Compatible interfaces.

NOTE: Slide 2.

- (1) Terminals (subscribers).
 - (a) Communications Terminal/Teletype AN/UGC-74
 - (b) Communications Terminal AN/UGC-144
- (2) Transmission Media (how the signals get from switch to switch and to subscribers).
 - (a) Radio - UHF, VHF, SHF, LOS
 - (b) Satellite - TACSAT or commercial
 - (c) Tropo Shots
 - (d) Microwave
 - (e) Direct Cable
- (2) Switch Interfaces.
 - (a) Other AN/TYC-39s (Army/Air Force)
 - (b) Army/Air Force/National Guard TRITAC Circuit Switches - AN/TTC-39A, 39D, 39D(PS)

NOTE: Slide 3 (more switch interfaces).

- (c) Mobile Subscriber Circuit Switches
- NCS, LEN.
- (d) MARFOR
- (e) AUTODIN
- (f) DSN
- (g) JTF - Joint Task Forces
- (h) NATO
- (i) NSA
- (j) DSSCS (DOI 103 format)

NOTE: Slide 4.

- (1) This portrays a typical Joint Task Force (JTF) message switching network with the connectivity and element designations that represent those typically required to support record data communications for a mature deployed JTF. Actual circuit connectivity and activation is a function of the exercise and contingency scenario, traffic requirements, and the transmission media available to support the circuits as dictated by the standard operating procedure (SOP) for the site.
- (2) The AN/TYC-39(A) in this example provides secure, processor controlled, store and forward message processing for both general service (GENSER) and the defense special security communications system (DSSCS)

NOTE: Show Slide 5. Draw on students' knowledge as 74C. This should be review for them.

f. Routing and multiple addressing.

Message Routing - Data transmission through the AN/TYC-39(A) is routing indicator (RI) oriented, as opposed to destination, telephone-number oriented as used in circuit switches.

NOTE: Show Slide 6.

- (a) RI breakdown/US Forces. A four to seven character alphabetic RI directs messages to all three communities.

1. First two letters identify community/group: RU, UU, YE.
2. First four letters together identify specific switch, relay, and geographical location.
3. For R/U communities add 2 or 3 for derivative tributary addresses/specific subscriber.
4. For Y-community add two letters - 6 letter RI.
5. H may be substituted for letter U in R/U-community.

NOTE: Show Slide 7.

(b) Collective RI's formed by:

1. Positions 1 and 2 of the router still represents community, eg RU.
2. Positions 3 and 4 letters will be CR - indicates a collective RI.
3. For R/U routers- last three positions (5,6,7) designate specific lists of RI's predefined in data base.
4. For Y routers - last two positions (5,6) designate specified lists of RI's predefined in data base.

(c) RI's are assigned IAW ACP 121 and DSSCS documents.

(d) ACP 117 documents actual RI assignments.

(e) R/U community, maximum 500 RIs per transmission.

(f) AN/TYC-39A memory has storage capacity for:

1. 1500 single address RIs.
2. 200 collective RIs (groups of ten).
3. 600 relay RIs.

g. Message processing and validation.

- (1) The AN/TYC-39(A) message switch can convert modes, alphabetic character codes, and message formats as necessary to provide data exchange among incompatible data terminals. Permits exchange of information between subscriber's terminal equipment with dissimilar characteristics over a worldwide network.
- (2) Switch receives message from a terminal, validates and reformats message when applicable, stores and forwards message to destination line/subscriber terminal. Validates such things as security levels, precedence usage, and channel sequence numbers.
- (3) Provides conversion of received message before forwarding to destination line/terminal. Not all terminals use same LMF, formats, etc. Verifies that the terminal can receive the message by checking such things as LMF and authorized security levels. The message switch AN/TYC-39(A) does not convert formats on DOI-103 (Intelligence formatted messages).
- (4) Precedence designators.

NOTE: Show Slide 8.

- (a) R-Routine.
 - (b) P-Priority.
 - (c) O-Operation Immediate.
 - (d) Z-Flash.
 - (e) Y-Emergency command procedure (ECP) (R/U community only).
 - (f) W-CRITIC (Y community only).
- (5) Language and Media Format.
 - (a) Card.
 - (b) Paper tape
 - (c) Magnetic tape.
 - (d) Teletypewriter (TTY).
 - (e) JANAP 128.
 - (f) JANAP 128 M. (Modified)
 - (g) ACP 127 NS3.
 - (h) ACP 127 M. (Modified)
 - (i) ACP 127

- (j) CRITIC (DOI-103)
 - (k) ASCII (American Standard Code for information interchange).
 - (l) ITA (International Telegraphic Alphabet).
 - (m) Baud.
- (6) Security designators.
- (a) U - Unclassified.
 - (b) E - EFTO (encrypted for transmission only).
 - (c) R - Restricted.
 - (d) C - Confidential.
 - (e) S - Secret.
 - (f) T - Top Secret.
 - (g) M - DSSCS.
 - (h) SPECAT - Special categories/handling.
- (7) Content Indicator Code (CIC) - Designed primarily for use by the receiving terminal as an aid in determining distribution of data messages. For example:
- (a) ZYVW - Service message.
 - (b) ZYUW - Narrative Message.
- (8) Speed of operation/Information rates..
- (a) The message switch AN/TYC-39(A) can receive and process 27 million characters during a peak hour. A peak day throughput is approximately 81 million characters or about 33,000 messages.
 - (b) Process an average of 10,000 messages per hour.
 - (c) Average processing time is less than 2 seconds per message.
 - (d) Transmission and information rates range from 45.5 baud to 32,000 (32K) baud.
- (8) Message length.
- (a) Modes I and V, 550-line blocks or 44,000 characters.

- (b) Mode II, 125-line blocks or 10,000 characters.
- (c) CRITIC (all modes Y-community) 74-line blocks or 5,920 characters.
- (d) IDDF Non CRITIC - 75-line blocks or 6,000 characters.

h. Message switch provides for:

- (1) Alternate routing.
- (2) Automatic-protection, OSSN, CSN.
- (3) Cantran procedures.
- (4) Message orbiting protection.
- (5) Message tracer actions.
- (6) Reference journal.
- (7) Short and Long Term message storage.
- (7) Intercept storage.
- (8) Overflow storage.
- (9) Audit Trail.
- (10) Message retrieval capabilities.
 - (a) Flash, ECP, and CRITIC messages received within last 24 hours can be retrieved from SDU in approximately 7 minutes.
 - (b) All others received within last the last 24 hours period can be retrieved from SDU in 15 minutes.
 - (c) All messages (all precedence) over 24 hours old can be retrieved in approximately 30 minutes.
- (11) Status, control and monitoring of equipment and system elements.
- (12) Report generation.
- (13) Data base update and status reporting to and from system control (SYSCON, CSCE, and system planners).

QUESTION: What communities are served by the AN/TYC-39A? (ANS: R/U/Y)

What are the message classifications handled by the switch? (ANS: U - Unclassified; E - EFTO (encrypted for transmission only); R - Restricted; C - Confidential; S - Secret; T - Top Secret; M - DSSCS; SPECAT - Special categories/handling)

What are the message precedences handled by the switch? (ANS: R-Routine; P-Priority; O-Operation Immediate; Z-Flash; Y-Emergency command procedure (ECP) (R/U community only); W-CRITIC/Y community only)

3. AN/TYC-39(A) External Components.

NOTES: Show Slide 9.

- a. Prime AC power, generator or commercial source, supplies input power to the power group. Enters at Power Entry Panel (PEP).
 - (1) External power is cabled to shelter to two waterproof receptacles located on power entry panel. Will normally use 50/60 Hz connector J1.
 - (2) Environmental control unit (ECU) power is applied through two receptacles on the power entry panel connectors J3 & J4.
 - (3) ECU circuit breakers are located on the power entry panel.
 - (4) Ground stud provides for earth grounding.
- b. Signal Entry Panel.
 - (1) Coaxial (DTG) cables provide digital trunk interfaces to circuit switch connectors A41 and A42.
 - (2) Twisted Pair (Twenty-six pair cable) - Provides for Single Line Entry Subscribers (SLES) for dedicated local and trunks through connectors J11 through J15.
 - (3) Intercom Connectors A40.
 - (4) DSVT/TA838 Telephone Cable Connector J16.
 - (5) Ground Stud provides for earth grounding.
- c. Vents
 - (1) Comfort Fan.
 - (2) Battery Exhaust.
 - (3) Entrance Vent.

d. Environmental control Units.

- (1) Two ECUs provide temperature stability, cooling and heating, within the shelter.
- (2) ECUs are mounted on front of shelter situated over the truck cab.

QUESTION: What connector do you use for 50/60 Hz prime ac power? (ANS: J1 at the power entry panel)

4. AN/TYC-39(A) interior equipment location and use.

NOTES: Show Slide 10. Refer students to TM 11-5805-790-12-1, paragraphs 1-9, 1-10, and 1-11.

- a. Power Group - Provides AC and DC voltages necessary for MS operation. Upon loss of prime AC, the battery backup system automatically maintains power to critical AC and DC operating equipment for a maximum of 15 minutes. Allows times to get Prime AC back on line. The power group is made up of the following assemblies. Power Group consists of:

- (1) Power Entry Panel.
- (2) Power control panel - contains indicators and monitoring devices to show status of ac and dc voltage, current and frequency levels.
- (3) AC/DC Circuit breaker panels provides for distribution of power to individual devices and protection of equipment.
- (4) Regulator/battery charger A23 - Used to convert/regulate AC power to DC and to charge battery banks.
- (5). Two battery banks (2 rechargeable batteries per bank) - Serves as the prime dc for all essential dc loads when loss of prime AC has occurred. Can maintain input for no more than 15 minutes.
- (6) Twelve-volt regulator (12VRG) cards used for +/- 12 VDC; located in Modem and ILI card nest.
- (7) 24-volt power supply PS1 - located behind power control panel. Provides the control voltages needed to make sure

that the power subsystem is started in the proper sequence.

- (8). DC-to-DC converters PS14 through PS15 - Provides power to Central Processors 1 and 2.
- (9) Power Processors PS4 and PS7 - provides dc voltages to those loads which require dc voltages other than the 26.5 volts supplied by the dc bus. Normally operates on ac voltage but can operate on dc. During the absence of prime ac the power processors will receive input power from the dc bus utilizing the battery backup system.

b. Lighting.

- (1) Ten 15-watt fluorescent light fixtures are mounted on the ceiling of the shelter for normal lighting.
- (2) Emergency lighting is provided by two 25-watt incandescent bulbs - To be used when prime power fails or during cold weather start-up to allow fluorescent lights to warm up.
- (3) When in blackout condition, two blackout lights are activated by a switch on the AC/DC power control panel when the door is opened. The blue lights light up and the fluorescent and/or emergency lights are deactivated when the door is opened. A switch in the door provides manual bypass of the blackout interlock feature.

c. Storage device facility (SDF).

- (1) Used to house operational storage device units (SDU).
- (2) Two SDUs per SDF.
- (3) SDUs used as a removable, magnetic hard drive. A SDU is capable of storing 208 Megabytes bits of data. Used for storage of history, overflow, intercept, control information, and traffic service data files.
- (4) SDUs A, B, C, D, E, F

d. Dual Floppy Disk Drive - DFDD

- (1) Houses two floppy disk drives FDD A & B.
 - (2) Utilizes High Density, Double Sided Floppy disks (2mb HD, DS 3.5 inch).
 - (3) Provides the means for storing, copying and loading system, diagnostic programs, and database updates.
- e. Intercom.
- (1) There is one intercom provided in the shelter. The operator may transmit and/or receive voice messages for subscribers or other interconnected voice switch. Used mainly during initial system setup.
 - (2) The intercom may be connected to subscribers through the time division interface group modified (TDIGM) patch panel.
 - (3) Other shelters may be connected to the intercom through the intercom connectors on the signal entry panel.
- f. Visual display terminal with keyboard (VDT)
- (1) Provides primary Man/Machine interface to the processors.
 - (2) VDT A - Supervisor Function - Equipment and system control.
 - (3) VDT B - Traffic Service Function - Receive, sends and monitor message traffic.
 - (4) VDT C - Maintenance (74G) and/or offline jobs (on curbside).
 - (5) Any VDT can be used for any of the above functions.
- g. Line printer unit (LPU) A & B - provides printouts of reporting data for each of the three VDT functions.
- h. ECU control - provides controls (temp, mode, fan, and compressor cb) to set operation of ECU1 and ECU2.
- i. Storage area.

- j. Control and Alarm panel - Allows manual configuration of controlling processor, shows status of processors, and displays certain major alarms.
- k. Controller nest - Contains controller circuit cards that provide for interfaces between peripheral devices (LPUs, SDUs, VDTs, FDDs) and processors.
- l. Processor 1 and 2 Control panel - contains the controls and indicators associated with the central processor. Permits status monitoring and control of processors 1 and 2. Each processor has its own 6-digit readout. Thumbwheel switches (octal addresses) are used to identify which peripheral devices the processor will interface.
- m. Processors 1 and 2 (ADP 1/2) - There are two CP-2107(v)1/G computer (L-3050v Litton Processors). The CPG performs the functions of message processing and switch control.
- n. Fan - Circulate air into the rack.
- o. Processor power supplies one for each processor. PS14 (proc 1) and PS15 (proc 2).

NOTES: Show Slide 11. Refer students to TM 11-5805-790-12-1, paragraph 1-10/1-11.

- (1) Black patch panels (modified) - Provide patching of circuits on both sides of modems. Contains encrypted signals going to and coming from subscribers.
- (2) Communication equipment facility (CEF) junction box (Black) (behind panel) - Provides a junction/connection for CEF cables for separation of encrypted and decrypted signals to/from CEF (COMSEC HGF-83 rack).
- (3) Radiation detector (behind panel) - In case of a nuclear event the radiation detector will shut off (trip circuit) the processor power supplies (PS14 and PS 15) to protect equipment.
- (4) SDU storage - Used to store spare SDUs.

- (5) Modem/time-division interface group modified (TDIGM) nest assembly (A23) - contains loop and group modem interface cards for dedicated and switched circuits. The modems perform the required conversions between the line and the switch. Also contains master timing generator which provides timing frequencies for switch systems.
- (6) Digital line concentrator (DLC) and intelligent line interface (ILI) nest assembly - Contains LTUs (line termination units, DLCs, and ILIs. DLC and ILI circuit cards provide for interfacing LTUs and message processor.
- (7) RED patch panels - Provide plain text/unencrypted connections/interface patching capabilities between the COMSEC equipment and line termination units in the ILI nest.
- (8) Power processors - DC-to-DC converters that provide dc voltages different from the dc power bus. They can operate from AC (normal) or DC (backup). PS4/5 provide power to the TDIGM Nest (A23). PS6/7 provide power to the DLC/ILI nest (A25).
- (9) Communication equipment facility (CEF) junction box Red - Provides a junction/connection for CEF cables for separation of encrypted and decrypted signals to/from CEF (COMSEC HGF-83 rack).
- (10) Communication junction box - connection for KY-68, TA 838 and intercom to interface the signal entry panel via the Modem/TDIGM nest (A23).
- (12) TA-838/TT telephone - Provide nonsecure communications to the AN/TTC-39 circuit switch telephone network.
- (13) DSVT KY-68 - Provides secure voice communications with AN/TTC-39, MSE Node Center and other circuit switch and MS operators.
- (14) COMSEC rack - HGF-83 rack. Provides COMSEC equipment for key control and encryption/decryption of signals

QUESTION: Names the VDTs and their normal functions.

(ANS: VDT A - Supervisor; VDT B - Traffic Service; VDT C - Offline/Maintenance)

5. MS central AN/TYC-39(A) personnel requirements.

a. The MS is designed to operate under normal conditions with a crew consisting of:

- (1) One E7 - 74 C/Z2 supervisor.
- (2) One E6 - 74 C/Z2 switch operator.
- (3) One E5 - 74 C/Z2 switch operator.
- (4) Two E4s - 74 C/Z2 switch operators.

b. Maintenance - The 74G is utilized in the AN/TYC-39A for unit/direct support maintenance.

c. Work positions.

(1) Supervisor's position.

(a) The operator at the supervisor's position is responsible for, but not limited to the following:

1. Select equipment for on-line configuration.
2. Take equipment off-line.
3. Enter line and trunk parameter changes.
4. Change parameters for thresholds.
5. Acknowledge alarms.
6. Request selected circuit and equipment status printouts and traffic status.
7. Initiate system recovery and restart.
8. Initiate system start-up and shutdown.
9. Initiate memory erase.

(b) Equipment utilized.

1. VDT keyboard.
2. High-speed printer.
3. Three SDUs (CN) (H1) (H2).
4. Intercom.

5. Digital secure voice telephone (DSVT).
6. TA-838/TT telephone.
7. Control alarm panel (CAP).
8. Automatic data processor (ADP).
9. Floppy disk drives.

(2) Traffic service position.

- (a) The operator of the traffic service position is responsible for, but not limited to:

1. Generation of reports.
2. Monitor service messages.
3. Prepare and transmit administrative messages.
4. Receive administrative messages.
5. Correct header errors.

- (b) Equipment utilized.

1. Printer unit.
2. SDUs as required.
3. VDT keyboard.
4. Intercom.
5. DSVT.
6. TA-838/TT telephone.

- (c) The traffic service position operator performs services in the MS. This position is not normally involved in the control and management aspects of the switch. It will be necessary for the traffic service position operator to assist the supervisor in their tasks from time to time.

(3) Off-line (maintenance).

- (a) Off-line position (uses standby processor).

- (b) Equipment utilized.

1. VDT/KB.
2. High-speed printer.

7H 57M

SUMMARY:

In this lesson, we discussed the capabilities and equipment located in the AN/TYC-39A. We discussed the location of equipment as it is located inside the message shelter. The practical exercise portion of this lesson has enabled you to check and reinforce your understanding of the material discussed during this lesson.

8H

This document support Task Numbers 113-583-1023 and 113-583-2620

END

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Power Initialization of the AN/TYC-39(A)

LEARNING

OBJECTIVES: Action: In Part One, the student will perform AN/TYC-39(A) power initialization procedures. In Part Two, the student will answer written questions about power initialization procedures.

Conditions: The student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-1, and practical exercise 260-ASIZ2/A01-LP3-PE.

Standard: Acceptable performance is achieved when In Part One, the student correctly performs power initialization procedures within 25 minutes. In Part Two, acceptable performance is achieved when the student correctly answers 7 of 10 written questions within 30 minutes.

SAFETY

CONSIDERATIONS: Danger - High voltages are present in this equipment.

RISK

ASSESSMENT: A risk assessment has been conducted on this unit of instruction and the risk level is deemed to be: LOW RISK.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM-11-5805-709-12-1, Practical Exercise 260-ASIZ2/A01-LP3-PE. Slides 1 through 3.

260-ASIZ2\A01-LP3

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

METHODS OF
INSTRUCTION:
TIME:

Conference, Demonstration, Practical Exercise
8 Hours

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
2. Ensure all safety procedures and practices are followed.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.

INTRODUCTION:

Elapsed
Time

1. If you purchase a new electrical appliance or product today, you will receive a manual or pamphlet containing the instructions to follow in order to operate it safely. As the operator of the AN/TYC-39(A) message switch, you will be required to power up the shelter and equipment of the message switch. Your knowledge of the proper power initialization procedures will ensure the protection of personnel and the successful deployment of the message switch.
2. This lesson will teach you the skills, knowledge, and procedures necessary for you to accomplish the task of performing power initialization procedures for the AN/TYC-39(A). You will learn the procedures to follow when performing power initialization. You will then practice using power initialization procedures until you have demonstrated the ability, in Part One, to perform power initialization procedures within 25 minutes, and in Part Two, correctly answer 7 of 10 written questions within 30 minutes.
3. Let's begin our study by discussing the power initialization procedures that you will be using when operating the AN/TYC-39(A) message switch.

3M

BODY:

1. Power initialization.

a. Purpose and use.

NOTE: Refer students to TM 11-5805-790-12-1, paragraph 2-25.

- (1) Power initialization procedures provide a safe sequential start-up procedure designed to protect the equipment and personnel within the message switch AN/TYC-39(A).
- (2) Power initialization is performed in two parts:
 - (a) The first procedure is a check to ensure that the equipment shelter is in a shut-down condition to prevent damage when performing next procedure.
 - (b) The second procedure is a sequential start-up procedure.

QUESTION: What are the two parts of power initialization procedures? (ANS: Check shutdown condition, and sequential start-up.)

10M

2. Power initialization procedures.

a. Perform system shutdown checks.

CAUTION

STUDENTS ARE NOT TO ATTEMPT TO REPEATEDLY CLOSE A CIRCUIT BREAKER.

NOTE: Show Slide 1

- (1) Your first step is to check the ground strap connections. To do this, loosen the wing nuts holding the side shields on the power entry panel cover and raise the cover. Check that the ground strap has been connected to the ground stud on the power panel and to the ground rod.
- (2) Check that the ECU power circuit breakers CB1/ECU1 and CB2/ECU2 are off. The circuit breakers CB1/ECU1 and

- CB2/ECU2 have a clear plastic dustcover. The circuit breakers are turned off and on through the dustcover.
- (3) Lower the power entry panel door and remove the shelter door port by turning the eight captive screws on the port cover counterclockwise and remove the cover. Anytime the shelter is occupied and the system is not operating but the door is closed, the shelter door port must be open for your safety. The battery exhaust fan is not operating and there may be a buildup of deadly fumes.
 - (4) Open the shelter door and enter the shelter.

NOTE: Show Slide 2

- (4) Inside the shelter locate the power control panel and check the following controls for a shutdown condition:
 - (a) Control AC circuit breakers - Phase A, Phase B, and Phase C are pressed in. Also ensure that the Control DC circuit breaker is pressed in.
 - (b) DC control circuit breaker - OFF.
 - (c) Comfort fan toggle switch - OFF.
 - (d) Comfort fan and emergency lights circuit breaker - ON.
 - (e) Main lights circuit breaker and main power circuit breaker - OFF.
- (5) Check that each individual overhead fluorescent light switch is off.
- (6) Check that the following circuit breaker panel controls are off:
 - (a) Shelter lights main and emergency switches.
 - (b) All DC and AC group circuit breakers.
- (7) Shut off DLC POWER circuit breakers.
 - (a) Set DLC A Slots 1 through 9 and DLC B Slots 10 through 18 circuit breakers to OFF.

- (8) At the battery box check that CB11 and CB12 are off by squeezing the two red tabs together.
- (9) At each CPG power supplies, set POWER ON/OFF switch to OFF. (PS14 and 15).
- (10) At the POWER PROCESSORS panels, set AC POWER circuit breakers and DC POWER ON/OFF switches - OFF for PS4 through PS7.
- (12) Ensure that all individual units and modules are shut off to include the VDT, LPU, COMSEC equipment, DFDD and SDUs.
- (13) Check that the intercom is off by rotating the SEND ON/OFF control knob fully counterclockwise.
- (14) This completes systems shutdown procedures. You are now ready to perform the start-up procedures.

b. Perform start-up procedures for message switch.

- (1) Step one, exit the shelter and check that the battery exhaust vent cover and personnel fan vent cover are open.
- (2) Move to the rear of the shelter and check the power entry panel connections. Raise the power entry panel cover. Check that power cable W3 is connected to J1 (50/60 Hz). Check that the ECU power cables W2 are connected to J3 and J4.
- (3) Now, turn on the external AC prime power source.

NOTE: Show Slide 3

- (4) At the power control panel complete the following steps:
 - (a) Check that the EMERGENCY OFF switch is ON.
 - (b) Set the PHASE SELECT switch to A.
 - (c) Check that the AC voltage meter reads between 103 and 127 volts AC.
 - (d) Check that the AC current meter reads close to zero.
 - (e) Set the PHASE SELECT switch to B and repeat the check of voltage and current meter readings. Repeat

- this procedure with the switch in the C position.
- (f) Check that the 50/60 Hz meter reads between 48 and 52 Hz for a 50 Hz source, or 58 and 62 Hz for a 60 Hz source.
 - (g) Set the main power circuit breaker on.
 - (h) Observe the BLACKOUT BYPASS indicator. This indicator should not be lit if you are in a blackout situation. Press the blackout bypass pushbutton ON or OFF, according to the current situation.
 - (i) Set the main lights circuit breaker ON.
- (5) Set the regulator charger circuit breaker on. (Observe that the REGULATOR CHARGER indicator lights and the BUS voltage meter reads between 25 and 27 volts DC.)
 - (6) Turn on the shelter lights as follows:
 - (a) Shelter lights MAIN and EMERGENCY switches ON.
 - (b) Shelter lights MAIN ON/OFF switch to ON.
 - (c) Shelter lights EMERGENCY ON/OFF switch to ON.

NOTE: Explain to students to leave the EMERGENCY LIGHT switch on until the shelter temperature is high enough for the fluorescent lights to stay on.

- (d) Turn on the overhead fluorescent lights individually, as needed.
- (7) Exit shelter and close the port cover on the shelter door.
- (8) While outside the shelter, raise the power entry panel cover and set CB1/ECU1 and CB2/ECU2 circuit breakers on.
- (9) Reenter shelter and turn on the ECUs. (Failure to follow the ECU turn-on sequence will trip the circuit breakers inside the ECUs.)

- (a) First, turn the MODE SELECTOR switches to the desired mode.
 - (b) Set the compressor circuit breakers on.
 - (c) Adjust the TEMPERATURE SELECTOR controls and evaporator fan speed for the required temperature conditions.
 - (d) Refasten the ECU panel cover using the five captive screws.
- (10) Turn on the battery box circuit breakers.
- (a) Press circuit breaker CB11 on and check that battery bank 1 on the BUS indicator lights.
 - (b) If the shelter has a second pair of batteries, press CB12 on and check that battery bank 2 on the BUS indicator lights.
- (11) Your next step is to turn on the DC power.
- (a) Check that the BATTERY EXHAUST FAULT indicator is not lit.
 - (b) Raise the switchguard to the DC ON-OFF pushbutton and depress it. (The indicator should light.)
 - (c) Check that the regulator charger on indicator is lit.
 - (d) Next, turn the CURRENT SELECT switch to charge and check the flow charge meter for a reading of 8 AMPERE or less. If the meter reads above 8 AMPERE charge the batteries, and proceed with the start-up procedures. In the school house you will NOT perform the equalization procedure.

NOTE: Refer students to TM 11-5805-683-12-1, paragraph 2-31 for equalizing charge procedures.

- (12) Turn on DC power to the individual units.

- (a) Set the DC CONTROL circuit breakers on.
 - (b) Turn on all remaining DC circuit breakers.
- (13) Set the remaining AC POWER SUPPLY PS4/PS5 and PS6/PS7 circuit breakers on.
 - (14) Turn on DLC power circuit breakers.
 - (15) At the power control panel, check the DC current meter for a reading of at least 25 AMPERES in each position.
 - (16) Turn on intercom. Rotate the SEND ON/OFF switch and RECEIVE control knob clockwise 180 degrees.
 - (17) Turn on individual units and modules. (VDT, LPU, CEF, DFDD and SDUs.)
 - (18) Turn on each individual MPS unit and module.
- (a) Ensure that the contrast knobs are fully counterclockwise, then set the power ON/OFF switches on each VDT.
 - (b) Set the LPU POWER switches on.
 - (c) Set DFDD power ON/OFF switches ON.
 - (d) Set the SDU power switches ON. Check that all POWER ON indicators are lit.
- (19) At this time, start-up procedures for the MCS are completed.

NOTE: Refer students to TM 11-5810 series of COMSEC manuals for circuit breaker and switch locations.

QUESTIONS: When you check the DC current meter readings for each position of the current select switch, what reading would you expect?
(ANS: Current should read in each position at least 25 amperes.)

You are performing start-up procedures, in what position must the battery exhaust vent cover and personnel comfort fan vent cover be? (ANS: Open position.)

3. Demonstration - power initialization procedures.
 - a. Demonstrate step-by-step system shutdown checks.
 - b. Demonstrate step-by-step start-up procedures.

2 H

4. Have students perform practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective. Coach, if necessary. Have two students work together on equipment during the practical exercise. Rotate students by roster. Those students not working on the equipment will complete part two of the practical exercise and will review all training material on power initialization.
 - a. Explanation to student.
 - (1) This is a two-part practical exercise. In Part one, you will perform power initialization procedures. In Part Two, you will answer written questions about power initialization procedures.
 - (2) If it is not clear what you are required to do, ask your instructor for clarification.
 - (3) When you feel confident that in Part One you can correctly perform power initialization procedures within 25 minutes and in Part Two, correctly answer 7 of 10 written questions within 30 minutes, ask one of your instructors to evaluate your work.
 - (4) If you have no questions, you may start your practical exercise by reading and following the directions in your practical exercise.
 - b. Application by students.
 - (1) In Part One, the student will perform power initialization procedures.
 - (2) In Part Two, the student will answer written questions about power initialization procedures.

(3) You will use your TMs to perform each individual step.

- c. Evaluation. During Part One of this exercise, evaluate each student to ensure they have the ability to correctly perform power initialization procedures within 25 minutes. In Part Two, evaluate each student to ensure they can correctly answer 7 of 10 written questions within 15 minutes.

7 H 55 M
SUMMARY:

You have now completed your training program on power initialization procedures. During your future assignments, you will be called upon to perform power initialization procedures for the AN/TYC-39(A) as well as other required procedures. With the skills and knowledge learned during this training session, you will be successful in accomplishing the task of power initialization.

8 H

END

This document supports Task Number 113-583-2620

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Peripheral Devices

OBJECTIVE: ACTION: In Part One, the student will identify control and alarm panel and peripheral devices' controls and indicators, identify visual display terminals (VDT) screens, install/remove storage device units (SDUs), load paper in the line printer unit (LPU) and install/remove floppy disks. In Part Two, the student will answer written questions.

CONDITIONS: In Part One, the student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-1, TM 11-5805-790-12-1, 11-5805-790-12-2, TM 11-5805-790-12-3, TM 5805-790-12-5, LPU paper, spare SDU, 3.5 double-sided/high density disk and practical exercise 260-ASIZ2/A01-LP4-PE. In Part Two, the student will be given TM 11-5805-790-12-1, TM 11-5805-790-12-2, TM 11-790-12-3, TM 11-5805-790-12-5, and practical exercise 260-ASIZ2/A01-LP4-PE.

STANDARD: In Part One, acceptable performance is achieved when the student identifies control and alarm panel and peripheral devices' controls and indicators, identifies VDT screens, installs/removes SDUs, installs/removes floppy disks, and loads paper into the LPU within 45 minutes. In Part Two, the student will correctly answer 25 of 35 written questions within 2 hours.

SAFETY

CONSIDERATIONS: Danger - High voltages are present in this equipment.

RISK ASSESSMENT: A risk assessment has been conducted on this unit of instruction and the risk level is deemed

260-ASIZ2/A01-LP4

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

to be: LOW RISK.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM-11-5805-790-12-1, TM 11-5805-790-12-2, TM 11-5805-790-12-3, TM 11-5805 790-12-5, spare SDU, one 3.5 inch double sided/high density (DS/HD) floppy disk, LPU paper, Practical Exercise 260-ASIZ2/A01-LP4-PE, Overhead Projector, and Slides.

METHODS OF

INSTRUCTION: Conference, Demonstration, Practical Exercise

TIME: 12 Hours

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
2. Ensure all safety procedures and practices are followed.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.

INTRODUCTION:

- | | |
|--------------|---|
| Elapsed Time | <ol style="list-style-type: none">1. As an operator/supervisor of the AN/TYC-39(A) message switch a knowledge of all peripheral devices functions and controls, and indicators will give you a better understanding of how the different equipment/components interface to provide message switching communications.2. This lesson will teach you the skills, knowledge, and procedures necessary for you to accomplish the tasks of identifying control and alarm panel and peripheral devices" controls and indicators, installing/removing SDUs, installing/removing floppy disks, and loading paper into the LPU.3. Let us begin our study by briefly discussing the control and alarm panel. |
|--------------|---|

BODY:

1. Control Alarm Panel (CAP)

NOTE: Show slide 1. Refer to TM 11-5805-790-12-1,

paragraph 1-48.

- a. Provides access for system configuration of peripheral equipment to the central processor group and provides indications of major system alarms.
- b. Utilizing the CAP during initial system startup configuration of peripheral devices is accomplished which allows a specific automatic data processor to gain control of all peripheral devices.
- c. CAP consists of:
 - (1) Front Panel with controls, indicators, and audible alarm circuitry.
 - (2) Controller circuit cards.
 - (a) Below the front panel is the area that contains controller circuit cards.
 - (b) Contains one CAPA, two CAPBs, and one CAPC. These circuit cards are normally accessed by maintenance personnel only.

NOTE: Refer to TM 11-5805-790-12-1, paragraph 2-11.

- d. Controls and indicators.
 - (1) PROGRAM LOAD group.
 - (a) PROC 1 pushbutton.
 - (b) PROC 2 pushbutton.
 - (2) PROCESSOR STATUS group.
 - (a) PROC 1 ON LINE indicator.
 - (b) PROC 1 STANDBY indicator.
 - (c) PROC 1 OFF LINE indicator.
 - (d) PROC 2 ON LINE indicator.
 - (e) PROC 2 STANDBY indicator.
 - (f) PROC 2 OFF LINE indicator.
 - (3) PERIPHERALS group.
 - (a) PROC 1/PROC 2 toggle switch.
 - (b) INITIATE pushbutton.
 - (4) SUMMARY FAULT/LAMP TEST group.
 - (a) SUMMARY FAULT indicator.
 - (b) Audible alarm.

- (c) Alarm TEST/RESET pushbutton.
 - (d) LAMP TEST pushbutton.
- 2. Dual Floppy Disk Drive (DFDD).

NOTE: Show slide 2. Refer to TM 11-5805-790-12-1, paragraphs 1-10c and 1-47c.

- a. Provides for two floppy disk drives: FDD A/left and FDD B/right. Each takes a 2Mb, double sided, high density (DS/HD) 3.5 inch floppy disk.
- b. FDD is used to store and load system programs (PLD), data base updates, and diagnostic programs. Changes to the data base can be recorded on floppy using these FDDs.
- c. Controls and indicators.

NOTE: Refer to TM 11-5805-790-12-1, para 2-9.

- (1) DR A POWER ON/OFF switch.
 - (2) DR A RDY indicator (green).
 - (3) DR A BSY indicator (red).
 - (4) DR A LAMP TEST pushbutton.
 - (5) DR B RDY indicator (green).
 - (6) DR B BSY indicator (red).
 - (7) DR B LAMP TEST pushbutton.
 - (8) DR B POWER ON/OFF switch.
 - (9) Eject lever/inside door.
- d. FDD operation.

NOTE: Show slide 3. Refer to TM 11-5805-790-12-1, para 2-31.

- (1) Write protect input disks or write enable output disks.
- (2) Insert floppy disk into FDD.
 - (a) Open door to FDD.
 - (b) Insert floppy disk and push it in until it drops into place.
 - (c) Close and secure door.
- (3) Remove floppy disk from FDD.
 - (a) Open door to FDD.
 - (b) Press in on eject lever. Disk pops out.
 - (c) Grasp disk between thumb and forefinger and remove it from the FDD.
 - (d) Close and secure door.

3. Storage Device Facility (SDF).

NOTE: Refer to TM 11-5805-790-12-1, paragraphs 1-10d and 1-47b.

- a. The SDF is used to house operational storage device units (SDUs), removable hard drives, for various operations within the message switch (MS).
 - (1) History.
 - (2) Overflow.
 - (3) Intercept.
 - (4) Control Information.
 - (5) Traffic Service.
- b. SDUs are configured at startup by using peripheral group switches on the CAP panel and during normal operations by using offline jobs and online commands. These procedures will be discussed in more detail during the processor start-up lesson.
- c. There are three SDFs which contain the slots for two SDUs each. The SDUs are then identified by position: SDU A, B, C, D, E, and F.
- d. Normal configurations of SDUs are:
 - (1) SDU A: used as a control SDU.
 - (2) SDU B: used as a History 1 SDU.
 - (3) SDU C: used as a History 2 SDU.
 - (4) SDU D: used as a Control SDU.
 - (5) SDU E: used as a History 1 SDU.
 - (6) SDU F: used as a History 2 SDU.
- e. Operation of the MS can be maintained by using a minimum of three SDUs in order for the system to remain online. The configuration of the SDUs would be:
 - (1) Control SDU.
 - (2) History 1 SDU.
 - (3) History 2 SDU.
- f. Controls and indicators.

NOTE: Show slide 4. Refer to TM 11-5805-790-12-1, paragraphs 2-10.

- (1) POWER ON/OFF switch.

- (2) POWER indicator (green).
- (3) DR A NOT RDY indicator (red).
- (4) DR A BUSY indicator (amber).
- (5) DR B NOT RDY indicator (red)
- (6) DR B BUSY indicator (amber).

g. Installing SDU into SDF.

NOTE: Show slide 5. Refer students to TM 11-5805-790-12-1, paragraph 2-30, page 2-103.

- (1) Release two quick release fasteners securing door of SDF and open door.
- (2) Loosen thumbscrews in center of SDU locking bar and move bar out of the way for inserting an SDU into the open SDF slot.
- (3) Carefully align guide rails of SDF and SDU, raise handle on SDU, and carefully insert SDU into SDF.
- (4) Push SDU firmly into place and lower handle.
- (5) Push locking bar to center position and tighten locking bar thumbscrew.
- (6) Close and secure door.

4. High-speed line printer unit (LPU).

NOTE: Refer students to TM 11-5805-790-12-1, paragraph 1-10f and 1-47a.

- a. Two high speed LPUs are installed in the message switch to support supervisory, traffic service, maintenance and off-line functions.
- b. Each line printer unit (LPU) is under the control of dual channel switch and operates through a line printer controller. These operations are enabled using specific offline jobs and online commands.
- c. One LPU must be available for online use. Both may be used online; however one may be assigned for offline jobs
- d. Provides printed copy of incoming messages and system printouts.
 - (1) Prints 30 lines per minute.
 - (2) Prints a maximum of 80 characters per line.
 - (3) Character set consists of the standard 96 ASCII alphabetic, numeric, and

selected graphics, except that the vertical tab character is replaced by a diamond () symbol.

e. Controls and indicators.

NOTE: Show slide 6. Refer to TM 11-5805-790-12-1, paragraph 2-8, page 2-20.

- (1) PWR indicator (green).
- (2) RDY indicator (white).
- (3) FT indicator (red).
- (4) PPR indicator (amber).
- (5) FF/TST switch.
- (6) 5LF/SLW switch.
- (7) LAMP on/OFF switch.
- (8) HOURS and TENTHS elapsed time indicator.
- (9) POWER ON switch.

NOTE: Show slide 7. Refer to TM 11-5805-790-12-1, paragraph 2-8, page 2-21.

- (10) FORMS THICKNESS THICK/THIN control.
- (11) Connector J1.
- (12) Circuit breaker CB1.
- (13) Connector J3.
- (14) Connector J2.
- (15) RUN/LOAD control.

f. Paper Loading Procedure.

- (1) To prevent the LPU from printing messages during paper loading, commands are entered at the VDT to make the LPU unavailable to the system.
- (2) Open front cover.
- (3) Unlock arm.
- (4) Access internal paper box or lower paper tray.
- (5) Load open stack of 400 single-ply, pressure-sensitive paper sheets into inside paper box or stack in lower external tray.
- (6) Feed in and align paper.
- (7) Load paper into stacker.
- (8) Check test pattern.
 - (a) Check test pattern.
 - (b) Adjust forms thickness control if required.
 - (c) Once adjusted, readjustment is seldom required.

- (9) Place the high-speed printer in offline or online state according to current needs. Commands to accomplish these procedures will be discussed in a future lesson.

QUESTIONS: When should you change the paper in the high-speed line printer? (ANS: When the low paper indicator (PPR) illuminates amber.)

How many LPUs are contained in the message switch? (ANS: Two.)

5. Visual Display unit(VDT)

NOTE: Show slide 8. Refer to TM 11-5805-790-12-1, paragraph 1-10g and 1-47d.

- a. The VDT is the primary man/machine interface. It provides the operators with the means to communicate with the central processor group (CPG). The VDT consist of a video display monitor and a keyboard.

NOTE: Show slide 9. Refer to TM 11-5805-790-12-1, paragraph 2-29c.

- (1) Keyboard allows operator to input information into the system.

- (a) Indicators.
- (b) Cursor movement keys.
- (c) Keyboard Operation keys.
- (d) Standard Keyboard keys.

NOTE: Show slide 9A. Refer to TM 11-5805-790-12-1, paragraph 2-29f.

- (2) Discuss the function keys and their uses:

- (a) FK1--ACK.
- (b) FK2--YES.
- (c) FK3--ACKT.
- (d) FK4--DISM.
- (e) FK5--MODE.
- (f) FK6--NO.

NOTE: Show Slide 10. Refer to TM 11-5805-790-12-1, paragraph 2-7.

(2) The monitor is a 7.6 by 3.8 inch plasma display which contains 25 rows (lines) of 80 characters each in the normal mode. Controls, indicators and connectors:

- (a) Power ON/OFF.
- (b) Power indicator (green).
- (c) VOLUME control.
- (d) SPEAKER ON/OFF switch.
- (e) LIGHT ON/OFF switch.
- (f) internal speaker.
- (g) KEYBOARD connector.
- (h) AUX connector - not used.
- (i) Printer connector - not used.
- (j) Line connector
- (k) Power Connector

b. There are three VDT/KB's per message switch . which operate in different modes. The normal mode for specific VDTs are as follows.

- (1) Supervisory position - VDT A.
- (2) Traffic Service position - VDT B
- (3) Maintenance position - VDT C.
- (4) Each VDT operates in one or more operating mode depending on the function it is serving.
- (5) The three devices are functionally interchangeable. The appropriate screen display will depend on the specific operating functions of the VDT:
 - (a) Supervisory.
 - (b) Traffic Service.
 - (c) Off-line/standby.

c. Supervisory Screen Display.

NOTE: Show slide 11. Refer to TM 11-5805-790-12-1, paragraph 2-29b and 5-5.

- (1) The 25 rows/lines of the supervisory display are divided into eight different areas consisting of one or more rows of data. Each row is further divided into fields, Each area has a different set of VDT mnemonics that may be displayed.
- (2) The system control area is the first row/line on the screen display for all VDT functions and modes of operation. The remaining 24 lines of the screen

display are also different for each VDT function and operating mode.

(3) System Control Area - Row 1:

- (a) Protected area (cannot be written on).
- (b) Divided into 13 fields.
- (c) Provides the operator with systems information relating to the following:

- 1. User ID.
- 2. Processor number.
- 3. Function.
- 4. Operating mode.
- 5. Job.
- 6. Alarm Active.
- 7. Edit Queue Pending.
- 8. Last Directive.
- 9. Directive Response.
- 10. Query Response.
- 11. Active Query.
- 12. Last function key.
- 13. Response function key.

(4) System Alarms Area - Row three:

- (a) Displays up to 20 serious system alarms.
- (b) Three character mnemonics separated by a space.
- (c) Press ACK key to acknowledge the blinking alarms.
- (d) Associated printouts occur at the LPU.

(5) Individual channel status readout Area - Rows 4 and 5:

- (a) Displays particular channel information.
- (b) Divided into 12 fields, seven in row 4 and five in row 5.

- 1. Logical Line Number
- 2. State/Mode/Function.
- 3. CS Trunk Number.
- 4. DTE Number
- 5. Routing Indicator; Trunks; Pseudo Names.
- 6. Spare.
- 7. Channel Status Alarms.
- 8. LTU number.

- 9. LKG number.
- 10. Modem number.
- 11. Message Queuing.
- 12. Equipment Status/Alarms.

- (c) Press ACKT key to acknowledge channel or equipment status alarms.
- (6) Supervisory Command Input/Response Area Rows 8-10:
 - (a) Area to type in supervisory (SUPE) command and receive system responses.
 - (b) SUPE commands may be 4 to 160 characters long and inputted into rows 8 and 9.
 - (c) Responses are from 13 to 80 characters and appear at row 9 or 10. Responses will contain ACK for or NAK.
 - (d) Will have associated LPU printouts
- (7) Equipment Status Summary Area - Rows 14-19:
 - (a) Display the status of all devices by name.
 - (b) Identified alphabetically or numerically depending on device: for example, ADP 1, SDU A, VDT SU.
 - (c) Show connectivity and availability.
- (8) Channel Status Summary Area - Rows 21-25:
 - (a) Gives the status of each channel.
 - (b) Read channel number by using intersecting matrix.
 - (c) Channel status is indicated by variety of mnemonics.
 - (d) Use ACK/ACKT to acknowledge serious alarm.
- (9) Combined traffic service and supervisory display.

NOTE: Show slide 12. Refer students to TM 11-5805-790-12-3, paragraph 5-12, pg 5-19.

- (a) The combined display has the same information as in the supervisory display except for:

1. The spare row, number 2, is replaced by traffic service functions.
2. If messages are queued for editing, rows 8-25 will display the messages.

(10) Supervisory Screen Graphic Display Area.

- (a) Shows the connectivity of the MS to other message switches, circuit switch, AUTODIN switch, and dedicated terminals.
- (b) Accessed by pressing MODE function key.
- (c) This mode will be discussed in more detail in future lessons.

d. Traffic service screen.

NOTE: Show slide 13. Refer students to TM 11-5805-790-12-2, paragraph 4-6.

(1) Display areas are:

- (a) System Control.
- (b) Traffic Service Control.
- (c) Traffic Service Operator Command input.
- (d) Traffic Service LOG entries, displayed for editing message input continuation.

(2) System Control - Row 1.

- (a) As in the supervisory screen the first row, system control area, displays system information in 13 fields. These fields were discussed in the supervisory screen.
- (b) Some of the traffic service fields may have different mnemonics.

(3) Traffic Service Control Area - Row 2.

- (a) Gives information on the current message status.
- (b) Divided into seven fields.

(4) Traffic Service Operator Command Input Area - Bottom 18 rows are used to

- compose and edit messages.
- (5) When in the SYS-LOG mode the bottom 15 rows of the display are used for log entries. This information will not be displayed on the combined traffic service and supervisory display.

e. Off-line/standby screen.

NOTE: Show slide 14. Refer to TM 11-5805-790-12-5, para 6-4 and 6-5.

- (1) The 25 rows are divided into two areas separated by a dashed line. The area above the dashed line is the current response/query portion. The area below the dashed line is the display/echo portion of the display which contains new and old data.
- (2) System control row is again row 1 and gives system information in 13 fields.
- (3) Operator response to current query - Rows 2-4.
- (a) Used for response to current query.
- (b) As you type in your response on the keyboard, it appears on lines 2, 3, and 4, as necessary.
- (c) When you finish your response and depress XMIT, the cursor returns to the beginning of line 2 and your response moves to the next available line in the display/echo portion.
- (4) Current Query displayed on rows 5-7. Also displayed on next available line in echo portion.
- (5) Line 8 is a dashed line separating the response/query area of the display.
- (6) Current Query Echo and Log is displayed on rows 9-25.

QUESTION: What is the position of the cursor when the VDTs are turned on? (ANS: The cursor appears in home position on the screen.)

What row of the screen of the supervisory VDT does the system alarms appear? (ANS: Row 3.)
What is the purpose of the system control partition? (ANS: The system control partition provides current equipment status and operational information.)

4H 55M

6. Demonstration. Move students to the switch and demonstrate the following:
 - a. SDU installation/removal.
 - b. FDD installation/removal.
 - c. Paper loading into the LPU.

5H 55M

7. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective. Coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on of the practical exercise, training will complete the written portion of the practical exercise.
 - a. Explanation to students.
 - (1) This practical exercise is divided into two parts. Part one is hands-on performance in the switch. Part two requires you to answer written questions.
 - (2) In Part One, You will identify the CAP and peripheral devices controls and indicators, identify VDT screens, install/remove SDU, install/remove FDD, and load paper into the LPU within 45 minutes.
 - (3) In Part Two, you must correctly answer 25 of 35 questions within 2 hours.
 - (4) In either part, if it is not clear what written questions you are required to do, ask your instructor for clarification.
 - b. Application by students.
 - (1) Proceed to the switch area when directed by your instructor to perform Part One. Perform the steps as they are sequenced in the Applications and have your instructor initial steps as you complete them.
 - (2) While waiting your turn in the switch or after completion of switch work, perform Part Two. Answer the written questions listed in the practical exercise and turn in to your instructor for grading.

- c. Evaluation. Evaluate students on both parts of the practical exercise. In Part One, evaluate each student's ability to identify the CAP and peripheral devices' controls and indicators, identify VDT screens, install/remove SDU, install/remove FDD, and load paper into the LPU within 45 minutes. In Part Two, each student will correctly answer 25 of 35 written questions within 2 hours.

11H 58M

SUMMARY:

You have now completed your training on how to identify CAP and peripheral devices' controls and indicators and perform selected functions. With the skills and knowledge learned during this training session, you will be successful in accomplishing various switch operations.

12H

END

This lesson supports Task Numbers 113-583-2616, 113-583-2617, and 113-583-2620.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Security Enhancements

LEARNING

OBJECTIVE: Action: The student will identify the security jobs/commands and their formats. Students will input commands into the AN/TYC-39A and answer written questions.

Condition: The student will be given TM 11-5805-790-12-2 and practical exercise 260-ASIZ2/A01-LP6-PE.

Standard: The students will meet the learning objective when they can correctly answer at least 7 out of 10 questions in practical exercise, 260-ASIZ2/A11-LP5-PE within 30 minutes and when the student correctly enters 7 out of 10 commands within 15 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Overhead Projector, Slides, 260-ASIZ2/A11-LP5-PE, Student Guide, Chalkboard, and TM 11-5805-790-12-2

METHODS OF

INSTRUCTION: Conference, Performance Exercise

TIME: 4 Hours

260-ASIZ2\A01-LP5

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

INSTRUCTOR NOTES:

1. Ensure the classroom is available, properly set up, and all equipment and training resources are available and in working order.
2. Ensure enough technical manuals and student guides are available and account for all slides.
3. Before the end of class, evaluate students on their ability to perform the learning objective.
4. State all safety notes as they appear throughout the lesson plan.

INTRODUCTION:

Elapsed Time	This lesson will focus on the security logon and logoff procedures, the audit commands and the security officer responsibilities for the security of the message switch.
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BODY:

1. Object reuse function.

NOTE: Show Slide 1.

- a. Any area of the system, processor memory or disks, which contains message data must be cleared as soon as that area becomes available for reuse. In some cases, this involves clearing an area before use. In other cases, the area is a fixed size and is completely overwritten by new data.
- b. The AN/TYC-39A uses L-3050V memory, SDUs, DLCP, LCF, and ILIP to store message information of differing security levels. L-3050V memory, SDUs, and floppy disks are used to store security-related database information. In the processing of messages and in the loading of the AN/TYC-39A, storage locations on these media are reused. The AN/TYC-39A clears or overlays all storage areas containing message- or security-related database information before releasing them for reuse.

2. User types.

NOTE: Show Slide 2.

- a. There are four user types. Each user type is authorized to perform a specific set of commands. Some commands are authorized for use by more than one user type. The four user types are as follows:

- (1) System security officer (SSO).
- (2) Administrator or supervisor.
- (3) Traffic service operator.
- (4) Maintenance.

NOTE: Refer students to TM 11-5805-790-12-2, paragraph 3-2, pages 3-6 through 3-10.

- b. Only one user may be logged on to a visual display terminal (VDT) at a time.

QUESTIONS: What user is authorized to perform the initiate loopback test LPBK command? (ANS: Supervisor or maintenance.)

How many user types are there and what are they? (ANS: Four S=security officer, A=administration or supervisor, T=traffic service M=maintenance.)

10M

3. Discretionary access function.

NOTE: Show Slide 3.

- a. Discretionary access is based on user type.
- b. Each command has one or more authorized user types.
- c. When a command is entered, the authorized user types for that command are compared with the type of user logged on to the VDT.
- d. If the types match, the command is processed.
- e. If they do not match, the command is NAKED/INVALID RESPONSE.

4. Mandatory access function.

- a. Mandatory access refers to individual commands and jobs that require functional passwords. When one of these commands or jobs is requested, not only is the user type checked for authorization, but an individual password for that command or job must also be entered. Passwords are required to perform the following functions:

- (1) Allied/US line classmarks.
- (2) SDU/memory printouts.
- (3) ECP authorization.
- (4) Security authorization.
- (5) TRC authorization.
- (6) SPECAT/SHD authorization.
- (7) Y community/SPECAT/SHD text print.
- (8) Date modification.
- (9) SSO related functions.

- b. When a command or job to perform one of these functions is entered, the system requests the entry of the applicable password. If the entry matches the password required for the command or job, the command or job is processed. If they do not match, the command or job is naked/aborted. Before echoing the entered command, the password is overlaid with dollar signs.

- c. The SSO maintains the functional password table using the TGEN command PASS to add and delete user ID and passwords and to maintain functional passwords. These procedures will be discussed and performed in a later lesson.

QUESTIONS: What happens if the command does not match the user type? (ANS: NAK or INVALID RESPONSE.)

Who maintains the functional password table?
(ANS: SSO).

15M

5. LOGON/LOGOFF.

NOTE: Show Slide 4.

- a. Log on to the off-line system.

- (1) This command can be entered by user types SSO, traffic service, administration or supervisor, and maintenance.
- (2) Upon successful completion of the LGON command, the system displays the date and time of the last successful logon made with the user ID and password in the command response line of the VDT.
- (3) The user is automatically logged off the system after 30 minutes of inactivity or upon entering the LGOF command.

NOTE: SHOW SLIDE 5.

- (4) After three successive unsuccessful logon attempts, the system locks out any further attempts by a user to access the system for 15 minutes.
- (5) LGON is invalid if the VDT has a current user logged-on.
- (6) To log on to the off-line system, perform the following:
 - (a) Query: NEXT JOB = ????
 - (b) Response: LGON
 - (c) Query: ENTER USER ID AND PASSWORD
 - (d) Response: uuuu yyyyyyyy\$ where:
 1. uuuu = the user's ID.
 2. yyyyyyyy = the user's password.

NOTE: Show slide 6. On-line LGON error in TM 11-5805-790-12-2, paragraph 3-5 pgs 3-16 and 3-17. TSF and COM mode do not require &SUP for online logon. All users use step 1 and step 5 on pg 3-17. Have students delete steps 2, 3, 4 on pg 3-17.

b. Log on to the on-line system.

- (1) This command is entered by user types SSO, traffic service, administration or supervisor, and maintenance.
- (2) Upon successful completion of the LGON command, the system displays the date and time of the last successful logon made with the USER ID in the command response line of the VDT.

- (3) The user is automatically logged off the system after 30 minutes of inactivity or upon entering the LGOF command.
- (4) After three successive unsuccessful logon attempts, the system locks out any further attempts by a user to access the system for 15 minutes.
- (5) LGON is invalid if the VDT has a current USER logged-on.
- (6) To logon to the on-line system, perform the following. LGON uuuu yyyyyyyy\$ where:
 - (a) uuuu = The user ID.
 - (b) yyyyyyyy = The user's password.
- (7) EXP system alarm - This alarm appears when the user has logged on within the two-day warning period before his or her user ID expiration.

NOTE: Show slide 7. Refer students to 11-5805-790-12-2, paragraph 3-6.

c. Log off the on-line or off-line system.

- (1) This command is entered by user types SSO, traffic service, administration or supervisor, and maintenance.
- (2) This command must be issued prior to allowing a new user to log on if there is a user currently logged on to the VDT.
- (3) LGOF is invalid if there is no logged on user on this VDT.
- (4) To logoff the on-line or off-line system, enter the log off command LGOF.
- (5) If the VDT is in the COM operating mode with any traffic service functions active or in the TSF operating mode, the VDT directive &SUP must be used to allow one SUPE command to be entered which at this time would be LGOF.
- (6) If on line and the VDT closes, the user is automatically logged off.
- (7) The user will be automatically logged off if there has been no activity at the VDT for 30 minutes.
- (8) Users are automatically logged off after initiating the following jobs: MPLD, MSLD, RECO, LFIM.

QUESTIONS: What alarm appears on the VDT when a user reaches the two-day warning of expiration?
(ANS: EXP.)

What are the commands that automatically logs the user off when the command completes?
(ANS: MPLD, MSLD, RECO, LFIM.)

What happens to the on-line user if the VDT closes? (ANS: The user is logged off.)

30 M

6. Print user ID and passwords.

NOTE: Show Slide 8.

a. On-line printout.

- (1) The on-line STAT PAS command permits the SSO to print out all current on-line functional passwords and all user ID information, to include the following:
 - (a) User ID.
 - (b) Password.
 - (c) Type.
 - (d) Activation and expiration dates.
- (2) The printout is preceded and followed by a form feed to keep it separated from all other printouts. The SSO should remove it from the printer immediately to keep it from being seen by unauthorized personnel.
- (3) To perform the command, enter STAT PAS at the on-line VDT.

b. Off-line printout.

- (1) The off-line job PASS (do not confuse with off line TGEN PASS) permits the SSO to print out all functional passwords and all user ID information, to include the following:
 - (a) User ID.
 - (b) Password.
 - (c) Type.

- (d) Activation and expiration dates.
- (2) The printout is preceded and followed by a form feed to keep it separated from all other printouts. The SSO should remove it from the printer immediately to keep it from being seen by unauthorized personnel.
- (3) To perform the command, enter PASS at the NEXT JOB prompt on the off-line VDT.

40M

NOTES: Show Slide 9. Refer students to TM 11-5805-790-12-2, pages 3-2 and 3-3, and paragraphs 3-12 through 3-17.

- 7. Audit function. The SSO is responsible for auditing the usage of the auditable commands. The audit reports may provide suspicions of possible compromise of security and indications of misuse or abuse. They may also show abnormalities in system operation which may require corrective action.

a. Types of audits.

- (1) On-line command audit - A command audit file is maintained on the control SDU. Every time an auditable on-line command is entered, an entry is made in the audit file. The entry contains the following information:
 - (a) Time.
 - (b) User ID.
 - (c) Type of event.
 - (d) Command origin.
 - (e) A copy of the command.
 - (f) System response to the command.
- (2) Off-line job audit - A paper audit trail is used to audit off-line jobs. All auditable commands entered off-line are numbered sequentially and printed on the LPU. Auditable commands cannot be entered if a printer is not assigned to the off-line function. All off-line jobs are auditable, except for MSLD and those associated with off-line fault isolation and maintenance functions (LFIM jobs).

b. Audit report printouts.

NOTES: Show Slide 10.

- (1) The AUDIT REPORT function is used to obtain a printout of a designated portion of the audit file maintained on a control SDU.
- (2) The printout contains those audit file entries created within a time range designated by the SSO.
- (3) The SSO may also request that the audit report be limited to entries for a particular user within the specified time range.
- (4) This function is available both on-line and off-line; however, the off-line function should only be used if the on-line system is not available, since the on-line must be degraded to configure a control SDU to off-line.
- (5) An audit report consists of individually generated sections, each of which is printed on a separate printer page for easy access by the SSO.
 - (a) The on-line audit report program generates a printout based upon the criteria specified in the AUDU/AUDF command, using the contents of the currently active audit file. Only one audit request may be active at any time; subsequent requests are NAKed until the report in progress has been completed. This report may only be requested by the SSO.
 - (b) The off-line audit report job (ARGO) generates a printout of the contents of the audit file that was built on-line on a control disk. Procedurally, this job should only be done if the on-line system is not available. An audit report generated off-line must use information from a control disk that is not currently connected to the on-line system. This job may be performed by user type SSO.
Equipment requirements:

1. VDT.
2. Printer.
3. SDU (CONTROL).

c. On-line audit report procedures.

NOTE: Show Slide 11.

- (1) Request audit report by user (AUDU) -
This command may be entered by user type
SSO. This command generates an audit
report for an individual user for the
specified time range.

(a) The format is as follows:

AUDU xxxx ddd bbbb yyy eeee
where:

- a. xxxx = A 4-character user
ID.
- b. ddd = Beginning Julian
day for report.
- c. bbbb = Beginning time of
the time range for the
report.
- d. yyy = Ending Julian day
for report.
- e. eeee = Ending time of the
time range for the
report.

- (b) Prior to validating the time range
in the command, the system
determines the year associated with
the specified day as follows:

If the command day/time is less
than or equal to the current
system day/time, it is
considered to be for the
current year; if greater, it is
considered to be for the
previous year. The actual time
range (including the year) is
then validated to be in
chronological order.

- (2) Request full audit report (AUDF) - This command may be entered by user type SSO. This command generates an audit report for all users for the specified time range.

(a) The format is as follows:

AUDF ddd bbbb yyy eeee where:

- a. ddd = Beginning Julian day for report.
- b. bbbb = Beginning time of the time range for the report.
- c. yyy = Ending Julian day for report.
- d. eeee = Ending time of the time range for report.

- (b) Prior to validating the time range in the command, the system determines the year associated with the specified day as follows:

If the command day/time is less than or equal to the current system day/time, it is considered to be for the current year; if greater, it is considered to be for the previous year. The actual time range (including the year) is then validated to be in chronological order.

- (3) NAK response - If the AUDU or AUDF command contains a format error, one of the following is displayed to the right of the NAK response:

- (a) INVALID OPTION INDICATOR.
- (b) INVALID USER ID FORMAT.
- (c) INVALID DATE PARAMETER.
- (d) INVALID TIME PARAMETER.
- (e) INVALID TIME RANGE.

NOTE Show Slide 12.

(4) The audit report is formatted into individual report pages. Each page consists of 58 lines, the first four lines of which contain header information. A maximum of nine audit entries appear on a report page following the header, with each entry containing six lines. Each report page is sequentially numbered, with the last report page containing the following notice***** REPORT COMPLETED *****.

- (a) ccc = switch number.
- (b) uuuuuuuuu = all users (for AUDF requests).
- (c) USER: uuuu (for AUDU requests).
- (d) ddd bb:bb = beginning Julian day/time for report.
- (e) yyy ee:ee = ending Julian day/time for report.
- (f) xxxx = ID of user that issued this auditable command.
- (g) zz..zz = event type.

- 1. SECURITY.
- 2. ROUTING.
- 3. SERVICE DENIAL.
- 4. USER/PASSWORD.

(h) nnn = origin of command.

- 1. SSF.
- 2. TSF.
- 3. DBD.

d. Off-line audit report procedures.

NOTE: Show Slide 13.

(1) In order to activate the off-line audit report, enter the following:

- (a) At the NEXT JOB prompt, enter ARGO.
- (b) ENTER DEVICE ID FOR SDU ICON - Give the ID of the control SDU to be used for the report. Enter A through F.
- (c) SDU NOT CONTROL - The SDU selected was not a control SDU.

- (d) INVALID CONTROL SDU INFORMATION - unable to locate start of audit file on SDU. Try other control SDU if available.

NOTE: Show Slide 14.

- (e) ENTER REPORT COMMAND - either AUDU or AUDF. The format and printout is the same as the online procedures.

55M

NOTE: Give students the current PLD list of user IDs and passwords.

- 8. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will complete the written portion of the practical exercise. Rotate students by roster.
 - a. Explanation to students.
 - (1) During this practical exercise you will practice using security jobs/commands associated with the AN/TYC-39A message switch.
 - (2) When you feel you can enter 10 security jobs/commands, ask one of your instructors to evaluate your performance. You must correctly enter 7 of the 10 within 15 minutes in order to receive a GO in part 1. When not in the switch you will answer 10 questions about the security enhancements and jobs/commands discussed in this lesson. You must correctly answer 7 of 10 questions within 30 minutes in order to receive a GO on part 2. When completed have your instructor grade your answers.
 - (3) If you have no questions, you may start your exercise by reading and following the directions in your practical exercise.
 - b. Application by students.

- (1) Proceed to the training site when you are directed by your instructor.
 - (2) Perform the procedures listed in the application portion of the practical exercise.
 - (3) When completed, remove papers from both printers and sign your name on them. Your instructor will use these to evaluate your performance.
 - (3) You will use your TMs to perform each individual step.
- c. Evaluation. Observe each student's switch performance and check printouts to determine that the students can correctly enter 7 of 10 security jobs/commands within 15 minutes and answer 7 of 10 questions correctly within 30 minutes.

3H 58M

SUMMARY:

In this lesson, we discussed the AN/TYC-39A security enhancements. The written and hands one practical exercise portion of this lesson should enable you to utilize these skills in future lessons.

4H

END

This document supports Task Numbers 113-583-2616, 2617, 2618, 2619, and 2620.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Utilities and Configuration Procedures

LEARNING

OBJECTIVE: Action: Students will identify utility and configuration jobs/commands and their formats. Students will input commands into the AN/TYC-39A and answer written questions.

Conditions: The student will be given TM 11-5805-790-12-2, 3, 5 and practical exercise 260-ASIZ2/A01-LP6-PE.

Standard: Acceptable performance is achieved when the student correctly answers 7 of 10 questions within 30 minutes and when the student correctly enters 10 out of 14 commands within 30 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: AN/TYC-39A, TM 11-5805-790-12-2, 12-3, 12-5, Overhead Projector, and Slides

METHODS OF

INSTRUCTION: Conference, Practical Exercise

TIME: 8 Hours

NOTES TO INSTRUCTOR :

1. Ensure that all training resources are available.
2. Ensure that all safety procedures and practices are followed.

260-ASIZ2\A01-LP6

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

INTRODUCTION:

Elapsed

Time

1. In the previous lessons, you identified the names and locations of equipment, performed power initialization, worked with peripheral devices, and learned about security enhancements.
2. This lesson will increase your knowledge of the AN/TYC-39A's capabilities and will focus on the off-line utility jobs and off-line/on-line configuration jobs/commands. These jobs and commands will allow the off-line and on-line processors to interface particular devices/equipment and perform specific functions.

BODY:

1. Jobs/Commands.

NOTE: Refer students to TM 11-5805-790-12-3, paragraph 5-15 and 12-5, paragraph 6-6.

- a. Instructs the central processor to perform many functions.
- b. Authorized users.
 - (1) The jobs/commands described in this lesson are those which a logged on administrator/supervisor user type is normally responsible for performing.
 - (2) Some of these commands may also be performed by other authorized user types: Security Officer (chapter 3); Traffic Service Operator (chapter 4); Maintenance.
- c. May be entered from the on-line SSF-VDT, the TSF-VDT and COM-VDT or from the off-line/standby VDT.
 - (1) On-line commands - Performed at VDTs that are interfacing with the online CPU (ADP). Refer to on-line command table in 12-2 manual, pages 3-6 through 3-9.

- (2) Off-line jobs - Performed at VDTs that are interfacing with the off-line/standby CPU (ADP). Refer to off-line Table in 12-2 manual, page 3-10.
 - d. Input the jobs/commands at the home position of the VDT. Position cursor after last character of command and press XMIT key to send to processor.
 - (1) May be from 4 to 160 characters in length.
 - (2) SBY - Begin entering at row 2.
 - (3) SSF/COM/TSF - Begin entering at row 8.
 - (a) A properly logged-user can input specific on-line commands at the SSF, COM, or TSF VDT.
 - (b) You must use VDT directive &SUP if you are entering SUPE commands at the TSF VDT or you are entering commands while in one of the traffic service modes of the COM VDT.
 - e. Processor Responses:
 - (1) Response is from 13 to 80 characters in length and appears in specific areas of the VDT. Position of displayed responses will depend on the VDT function.
 - (2) On-line response will appear in the line following the command input. Will include ACK or NAK along with error statement/reason codes.
 - (3) Off-line responses will appear below dotted line (echo area) with the most current at the bottom.
- NOTE: Refer students to TM 11-5805-790-12-5, paragraph 6-47b.
- f. When entering commands, you may receive error messages for various reasons.
 - (1) Wrong command formats, typos.
 - (2) Not logged on.
 - (3) Improper user type logged on.

10M

- (4) Invalid device type or ID.
- (5) Equipment not connected or available to proper CPU (ADP).
- (6) Equipment not powered-up
- (7) Already in use by the CPU.

NOTE: Refer students to TM 11-5805-790-12-5, Section V, Utility Jobs.

2. Utility Jobs and Formats - These off-line utility jobs allow formatting, copying and displaying and/or printing the contents of disks or memory.

NOTE: Show slide 1.

- a. DINL - Initialize disk/SDU.

- (1) Performed by Supervisor/Security Officer.
- (2) Used to format an SDU hard drive (Winchester Disk).
- (3) Takes approximately 20 minutes to complete.

NOTE: Show slide 2.

- (4) Password required to DINL a control SDU.
- (5) Both off-line ADPs can be used to DINL at the same time which allows two SDUs to be initialized.
- (6) If one ADP is on-line, only the off-line ADP can be used to DINL.
- (7) When DINL is complete, the procedure indicates the number of "BAD" blocks. An SDU can be used with a small number of bad blocks, but it is not recommended. It should be turned in to maintenance.
- (8) Requires VDT, LPU, and SDU.

NOTE: Show slide 3.

- b. DTOP - Disk print/SDU.

- (1) Performed by Supervisor/Security Officer.
- (2) Used to print up to 99 sectors on an SDU.

- (3) Not normally performed by operator.
Used mainly for maintenance/diagnostic purposes.
- (4) Requires VDT, LPU, SDU.

NOTE: Show slide 4.

c. FCMP - Floppy disk compare.

- (1) Performed by Supervisor.
- (2) Used to compare the data, file by file, from two floppy disks.
- (3) It is useful after copying a floppy to verify that a good copy took place.
- (4) Requires VDT, LPU, both FDDs.

NOTE: Show slide 5.

d. FINL - Initialize floppy disk.

- (1) Performed by Supervisor.
- (2) This job formats a floppy disk, writes all zeros to it, and builds the file allocation table and directory.
- (3) It ensures that the first 129 sectors of the floppy have no errors and the floppy has a minimum number of good sectors available.
- (4) Procedure takes about two minutes.
- (5) Requires VDT, LPU, 1 FDD.

NOTE: Show slide 6.

e. FTOF - Copy floppy disk (floppy to floppy).

- (1) Performed by Supervisor.
- (2) Used to copy data from one floppy to another.
- (3) Useful in creating a backup copy of a floppy that contains your operating data base (PLD).
- (4) FCMP should be done at the end of FTOF procedure.
- (5) Procedure takes about two to three minutes.
- (6) Requires VDT, LPU, both FDDs.

NOTE: Show slide 7.

f. PTOD - Copy PLD to SDU.

- (1) Performed by Supervisor.
- (2) Used to copy the PLD to an SDU.
- (3) Allows the operator to make a backup copy of the PLD on an SDU to be used if unable to bootload from floppy.
- (4) Requires VDT, LPU, SDU, FDD.

NOTE: Show slide 8.

g. VTOF - VDT to floppy disk (DBD File).

- (1) Performed by Supervisor and Security Officer.
- (2) Used to generate, print, or update a database command file for either line classmarks or security password tables.
- (3) Generate does not yield a validated file (doesn't check database records for errors); it places 80-character ASCII records on a floppy disk for later validation by TGEN.
- (4) Generate/update input can be from VDT keyboard or floppy disk that has been created by a PC program such as DOS editor (file name-dbcmd.pcf). Allows PC floppy conversion to language that the MS can understand.
- (5) List provides DBD file list.
- (6) Requires VDT, LPU, and one or two FDDs.

NOTE: Show slide 9. Refer students to TM 11-5805-790-12-5, Section X.

3. Off-line Configuration jobs. Performed at off-line/standby processors at NEXT JOB? prompt. Requires a logged on user. Requires VDT, CAP, and LPU. All operator responses are entered at the VDT keyboard and must begin at the home position of the VDT screen. Place cursor after last character of job and press XMIT.

a. CONF - Configuration Job. Allows all user types to access the specific off-line configuration jobs.

- (1) Performed at off-line/standby VDT in response to "NEXT JOB?" query. The

resulting query "WHICH CONFIGURATION FUNCTION" will appear if CONF is accepted.

- (2) Must be in this state in order to perform off line CONF functions: CONN, DCON, SHOW, NONE.
- (3) All CONF functions are allowed when no ADP is at the on-line state. When one ADP is on-line, then the CONF job only produces SHOW.

NOTE: Show slide 10.

b. CONN - Allows connection of a device (SDU, VDT, LPU, FDD, DLC) to off-line processor.

- (1) Used to assign equipment needed to perform other off-line jobs at both standby processors: DINL, FINL, etc.
- (2) This will depend on equipment required to perform other jobs and on the status of both processors.

NOTE: Show slide 11.

c. DCON - Disconnect a device (SDU, VDT, LPU, FDD, DLC) from off-line/standby processors.

NOTE: Show slide 12.

d. SHOW - Shows connectivity status of ADP, SDU, VDT, LPU, FDD, and DLC.

- (1) ADP indicates processor status of Processor 1 and 2. "D" for down; "S" for standby, or "O" for on-line.
- (2) The SDU, VDT, LPU, FDD, DLC lines will indicate either the processor number (1 or 2) to which the device is connected and/or "D" indicating disconnected.

NOTE: Show slide 13.

e. NONE - used to exit CONF.

- (1) Entered in response to the "WHICH CONFIGURATION FUNCTION?" query if no further configuration function is needed (CONN, DCON, or SHOW).

- (2) NEXT JOB? query should appear if NONE is successful.

NOTE: Show slide 14. Refer students to TM 11-5805-790-12-3, para 5-26.

4. Supervisory Configuration Management Commands. These are commands accessed through on-line processor VDTs and are utilized to configure equipment/devices to off-line and on-line processors.

NOTE: Show slide 15. Refer students to TM 11-5805-790-12-3, paragraph 5-26a.

- a. CONN - Connect a device to the off-line processor.
- (1) Used to connect required devices/equipment to off-line processor in order to perform other off-line procedures while one ADP is on line: such as FINL, DINL, and maintenance functions.
 - (2) Changes will appear at equipment status area for the specified device from -D or +D to -C or +C.
 - (3) Does not affect the -/+ status because this indicates the on-line processor device availability. (SDU, VDT, LPU, TDIM, FDD, ILI)
- b. CONN TED - Connect TED to off-line TDIM.
- c. DCON - Disconnect device from off-line processor.
- (1) Changes equipment status of the specified device from -C or +C to -D or +D. (SDU, VDT, LPU, TDIM, TED, FDD, ILI)
 - (2) Does not affect the +/- state.

NOTE: Show slide 16.

- d. YAVL - Make a device available for on-line use.

- (1) Normally changes a device state from the -C or -D to +C or +D.
 - (2) Does not affect the C or D as this indicates connectivity to the off-line processor UNLESS the on-line processor immediately brings the device to the on-line state.
 - (3) The on-line processor prefers two VDTs and both LPUs and will grab them if they become available. (SDU, VDT, LPU, DLC, MTG, ICU, TDIM, TSB, FDD)
- e. NAVL - Makes a device unavailable for on-line use.
- (1) The specified equipment cannot be in the on-line state. (SDU, VDT, LPU, DLC, MTG, ICU, TDIM, TSB, FDD)
 - (2) Changes a device from the +C or +D to -C or -D.
 - (3) Does not affect the C or D as this indicates connectivity to the off-line processor.

NOTE: Show slide 17.

- f. YIGN - Yes, Ignore status.
- (1) Used to ignore any attempted commands (DCON, CONN, YAVL, NAVL) to change the state of a device. Device cannot be in the on-line state.

- g. NIGN - No or "Not Ignore" status. Remove ignore status from a device.

NOTE: Show slide 18.

- h. CLOS - Close an on-line device.
- (1) Used to take an on-line device (assigned to an on-line function) to the -D state: unavailable, disconnected state. (SDU, VDT, LPU, DLC, MTG, ICU, TDIM, TSB)
 - (2) Be extremely careful not to CLOS a device without having an alternate or backup device to take over, either already on line or at the +C or +D

state. This especially applies to VDTs and LPU's.

- i. CLOS DBO - Close an on-line database command output (DBO) File.
 - (1) Closes data base file writing of on-line data base commands to floppy. (GOST would originally take the FDD to the WD state.).
 - (2) This command will be discussed in more detail in later database lessons.
- j. OPEN DBI - Open an on-line database command input file.
 - (1) Will change FDD to RD state to allow on-line reading of a DBI file (DBD disk) utilizing RICH D command.
 - (2) This command will be discussed in more detail in later database lessons.
- k. SDCN - Special Disconnect.
 - (1) Force disconnection of a device from off-line processor.
 - (2) Device must be at the "-": unavailable, not assigned online. (SDU, VDT, LPU, FDD, TDIM, TED)

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- 5. Practical Exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will complete the written portion of the practical exercise. Rotate students by roster.
 - a. Explanation to students.
 - (1) During this practical exercise you will practice using utility/configuration jobs/commands associated with the AN/TYC-39 message switch.
 - (2) When you feel confident you can enter 14 utility or configuration commands, ask one of your instructors to evaluate your performance. You must correctly enter

10 of the 14 within 30 minutes in order to receive a GO in part 1. When not in the switch you will answer 10 questions about the jobs/commands discussed in this lesson. You must correctly answer 7 of 10 questions within 30 minutes in order to receive a GO on part 2. When completed have your instructor grade your answers.

- (3) If you have no questions, you may start your exercise by reading and following the directions in your practical exercise.

b. Application by students.

- (1) Proceed to the training site when you are directed by your instructor.
- (2) Perform the procedures listed in the application portion of the practical exercise.
- (3) When completed, remove papers from both printers and sign your name on them. Your instructor will use these to evaluate your performance.
- (3) You will use your TMs to perform each individual step.

c. Evaluation. Observe each student's switch performance and check printouts to determine that the students can correctly enter 10 of 14 utility or configuration commands within 30 minutes and answer 7 of 10 questions correctly within 30 minutes.

7H 58M

SUMMARY:

1. You have now completed your class on utility/configuration jobs/commands of the AN/TYC-39(A).
2. During future classes, you will be required to perform these procedures to help you utilize other capabilities of the Message Switch. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

8H

END

This document supports Task Number 113-583-2616, 113-583-2617, 113-583-2618, 113-583-2619, and 113-583-2620.

U.S. ARMY SIGNAL SCHOOL AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Processor Start-up Procedures

LEARNING
OBJECTIVE:

Action: The student will perform AN/TYC-39A processor start-up procedures and answer written questions.

Conditions: The student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-1, TM 11-5805-790-12-3, TM 11-5805-790-12-5, and practical exercise 260-ASIZ2/A01-LP7-PE.

Standards: Acceptable performance is achieved when the student correctly performs processor start-up procedures within 30 minutes and correctly answers 7 of 10 questions.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCES
NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM 11-5805 790-12-1, TM 11-5805-790-12-3, TM 11-6805-790-12-5, 260-ASIZ2/A01-LP7-PE, Overhead Projector, and Slides

METHODS OF

INSTRUCTION: Conference, Demonstration, Practical Exercise

TIME: 17 Hours

BODY:

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
260-ASIZ2/A01-LP07 1

APPROVAL DATE: 17 APR 98
DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

2. Ensure all safety procedures and practices are followed.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the PE.
5. At the end of the class, ensure all equipment is operational.

INTRODUCTION:

- | | |
|--------------|--|
| Elapsed Time | <ol style="list-style-type: none"> 1. As an operator/supervisor it is important that you know how to perform all the procedures that are required prior to performing AN/TYC-39(A) processor start-up procedures. 2. This lesson will teach you the skills, knowledge, and procedures necessary for you to accomplish the task of performing AN/TYC-39(A) processor start-up procedures to include bringing processors to standby and performing manual system recovery. 3. Let us begin our study by discussing the normal processor start-up procedure that is used with the message switch AN/TYC-39(A). |
|--------------|--|

3M

BODY:

1. Normal processor start-up procedure - using FDD to load PLD and using DINLed SDUs.

NOTES: Show Slide 1. Refer students to TM 11-5805-790-12-1, paragraph 2-27, page 2-69.

- a. Install PLD disk 1; disk 2 contains LFIM routines for maintenance use only.
 - (1) Write protect and insert PLDB1 into floppy disk drive (FDD) A or B.
 - (2) Close FDD door.
- b. Load bootstrap program. The bootstrap program is the first block on the PLD. When loaded into processor memory, it takes control of the processor and enables it to enter the standby/off-line mode of

operation.

NOTE: Show Slide 2.

- (1) On status and control panel of central processing unit (CPU) which is to be started, set PROGRAM TEST thumbwheel switches to octal device address of FDD where PLD is mounted (10 for FDD A, 11 for FDD B).
- (2) On control and alarm panel (CAP), set PERIPHERALS toggle switch to processor to be on-line (controlling), PROC 1 or PROC 2.
- (3) Depress INITIATE pushbutton once only.
- (4) On associated CPU, depress RESTART pushbutton.
- (5) The next two steps must be performed within a limited time period.
 - (a) On CAP depress PROGRAM LOAD pushbutton (twice).
 - (b) The central process group (CPG) then begins to run a diagnostic test which takes a short time. The diagnose status display first reads 777777, changes to 777007 and this changes to 000000.
- (6) The next step must be completed within 5 seconds after diagnose status changes to 000000 (or between 777007 and 000000 but not before).

NOTE: Show Slide 3.

- (a) Set the right PROGRAM TEST thumbwheel switch to the desired number for the VDT being used. (that is, if using VDT C, the number will be set to 3).
- (b) Set the left PROGRAM TEST thumbwheel switch to the desired number for the FDD which contains the PLD: that is, for using FDD A, thumbwheel will be set to number 1 or for FDD B, number 2.

c. Load standby routine.

- (1) VDT display and responses.
- (a) MEMORY TEST IN PROGRESS
(no response).
 - (b) SVOP FDD IPLD A 10,
SVCL FDD IPLD A 10 (no response).
 - (c) ENTER DEVICE ID FOR LPU SBY. ENTER
N IF PRINTER NOT TO BE ASSIGNED.
Response would be A or B; normally
A.
 - (d) SVOP LPU SBY A 16,
SVOP FDD IPLD A 10 (after one
minute).
MSLD LOAD SUMMARY: 00 ERRORS
00 POSSIBLE ERRORS
VER=v REV=rr DBID=dd
(no response).
 - (e) ENTER YR DAYTIME?
(that is: yy dddtttt-97 0011300)
 - (f) NEXT JOB=????; Processor is not in
the standby mode-check CAP panel
for amber standby lamp.
 - a. LGON
 - b. Enter USER ID and PASSWORD.
User must be
administrator/supervisor
type: xxxx/user ID; YYYYYYY
user's password.
 - (g) Off-line jobs may now be performed
at the standby processor such as
FINL, DINL, etc.
 - (h) This processor may now be brought
on line or the second processor
may be placed in standby. We will
continue with our startup
procedure by bringing the second
processor to standby.

QUESTIONS: How many times must the initiate pushbutton
be pressed? (ANS: Once.)

How many times must the PROGRAM LOAD
pushbutton be pressed? (ANS: Twice.)

- d. Start up second processor with first
processor in off-line/standby status.

NOTE: Show Slide 4. Refer to TM 11-5805-790-12-1,

para 2-27d, pg 2-72.

- (1) At VDT NEXT JOB prompt enter the CONF command to connect VDT, LPU, and FDD. All peripherals were connected to first processor by setting peripheral switch and pressing initiate button on CAP. In order for controlling processor to share devices needed to bring second processor to standby, the CONF/CONN jobs must be done.
 - (a) Example: CONN VDT C. Must be one not assigned to processor that was just started.
 - (b) Example: CONN LPU B. Must be one not assigned to processor that was just started.
 - (c) Example: CONN FDD A. Must be FDD that contains PLD. Can be same one that was used to startup processor.

NOTE: Show slide 5.

- (2) On status and control panel of CPU which is to be started, set PROGRAM TEST thumbwheel switches (1 and 2) to octal device address of FDD where PLD is mounted (10 for FDD A, 11 for FDD B).
- (3) On CPU, depress RESTART pushbutton.
- (4) The next two steps must be performed within a limited time period.
 - (a) On CAP depress PROGRAM LOAD pushbutton (TWICE).
 - (b) The CPG then begins to run a diagnostic test which takes several minutes. The diagnose status display reads a series of numbers ranging from 777777 to 000000.
- (5) The next step must be completed within 5 seconds after diagnose status changes to 000000.
 - (a) PROGRAM TEST thumbwheels.

NOTE: Show Slide 6.

1. Set the right PROGRAM TEST thumbwheel switch to the desired number for the VDT being used. Set for VDT that was CONN in previous steps.
2. Set the left PROGRAM TEST thumbwheel switch to the desired number for the FDD which contains the PLD; set for FDD that was CONN in previous steps.

(6) Load standby routine.

(a) VDT display and responses.

1. MEMORY TEST IN PROGRESS (no response).
2. SVOP FDD IPLD A 10, SVCL FDD IPLD A 10 (no response).

(b) ENTER DEVICE ID FOR LPU SBY. ENTER N IF PRINTER NOT TO BE ASSIGNED (A).

(c) SVOP LPU SBY A 16,
SVOP FDD IPLD A 10 (after one minute).
MSLD LOAD SUMMARY: 00 ERRORS
00 POSSIBLE ERRORS
VER=v REV=rr DBID=dd
(no response).

(d) ENTER YR DAYTIME?
(that is: yy dddtttt, 97 0011300.

(e) NEXT JOB=?????. Second processor is now at standby; check CAP.

- a. LGON
(administrator/supervisor).
- b. XXXX is user ID yyyyyyy is user's password.

QUESTION: Which user type should LGON when performing processor startup? (ANS: Administrator or supervisor.)

e. Bring controlling processor on-line.

NOTE: Show Slide 7.

- (1) At NEXT JOB prompt of VDT that is connected to controlling processor, enter MPLD (message program load). Supervisor should still be logged on from standby procedure.
- (2) If MPLD is done at the 2d processor's VDT, the 2d processor has no connection to the SDUs and can't locate them.
- (3) LIST DEVICES TO BE IGNORED; devices down for maintenance. If none type END and press XMIT key.
- (4) LIST DEVICES TO BE UNAVAILABLE; devices not to be used on-line. These would include devices that you want to use for off-line jobs with off-line PROC. If none type END and press XMIT key.

If there are devices to be ignored unavailable, list the devices separated by spaces, enter end and press XMIT.

- (5) The processor enters an abbreviated, or stall, cycle. The STL alarm appears on the SSF-VDT display. CFN alarm may also appear if you are using 3 SDUs. The situations that caused these alarms must be removed by correcting equipment problem or acknowledging the situation. Cannot be done until LGON has been performed.
- (6) LGON xxxx yyyyyyy\$; xxxx/user id; yyyyyyy/user password.
- (7) Check system alarms. The following system alarms MUST be removed before proceeding with any other online functions.
 - (a) CFN - install proper SDUs or use SCSD to allow use of three SDUs.
 - (b) STL - Use ABCY D to acknowledge and remove alarm.
- (8) CAP should show controlling processor online and second processor on standby.
- (9) If first processor had been brought to on-line before second processor was brought to standby the next paragraph would be performed to bring second

- processor to standby. This paragraph is essentially the same procedure.
- (10) Last step in normal system startup is to place circuit guards in patch panel for Y-community lines to prevent additional patching between communities.

2. Alternate processor start-up procedure - using SDU to load PLD and using DINLed SDUs.

NOTES: Show Slide 8. Refer to TM 11-5805-790-12-1, para 2-28.

- a. Used in an emergency if PLD on floppy or FDD cannot be used.
- b. PLD would have been loaded from FDD to SDU previously using PTOD.
- c. Only SDUs A, B, C, or D can contain the PLD. SDUs E and F cannot contain PLD.
- d. Major differences between normal startup and alternate startup is the addresses set for thumbwheels on processors represent SDUs and VDT and the CONN command to assign SDU for bringing second processor to standby.

3. Recovery

NOTES: Show Slide 9. Refer to TM 11-5805-790-12-5, para 6-45.

- a. Recovery is normally initiated without operator intervention following a on-line processor failure with switchover to standby processor.

NOTE: Show Slide 10.

- b. Can be manually initiated whenever the operator enters RECO in response to the query NEXT JOB=???. Will be the SDUs that have been used previously with an on-line processor. RECO is not used with DINLed disks.

NOTE: Show Slide 11.

- c. The system is restored to the state it was in before the failure. This includes restoration and recovery of:
 - (1) Database (GOST read is not required.)
 - (2) Active message diversion.
 - (3) Intercept.
 - (4) Overflow.
 - (5) Equipment configuration.
 - (6) Traffic service data files.
 - (7) Security audit files.
 - (8) Channels that were in service in the pre-failure system are automatically restored to service (mode II return to XMIT mode).
 - (9) Channel sequence number (CSN) printout is no longer required since operator does not have to set CSNs; operator can now view CSNs.
 - (10) Cumulative traffic statistics.
 - (11) IC/OV statistics.
 - (12) Message diversion statistics.
 - (13) All messages undelivered at the time of the failure are identified by the recovery balance result printout and rescheduled for transmission, thereby maintaining message accountability.
 - (14) All other statistical information is initialized after the recovery.
- d. Recovery will provide for verification of system status, message accountability and accuracy.

NOTE: Show Slide 12.

- e. The following equipment is required to run a normal recovery:
 - (1) FDD or SDU with PLD.
 - (2) Three SDUs (control, history1, history2).
 - (3) One video display terminal (VDT).
 - (4) One line printer unit (LPU).
- f. Recovery queries. Although recovery is designed to operate without operator intervention, there may be times when the operator is queried by the system. The queries shown here are examples and do not

appear in any certain order or in every RECO procedure.

NOTE: Show Slide 13.

- (1) Query: SDU A: xxx
SDU B: xxx
SDU C: xxx
SDU D: xxx
SDU E: xxx
SDU F: xxx
 - (a) ENTER Y AFTER MOUNTING SDUs AS ABOVE OR ENTER N TO TERMINATE RECOVERY.
 - (b) Meaning: xxx = SDU type: CON, HS1, or HS2. The current SDU configuration does not match the pre-failure SDU configuration. The pre-failure configuration is listed.
 - (c) Response: Mount the SDUs as shown. If unable to comply, mount SDUs as closely as possible to this configuration. If SDUs A and B are both control SDUs or both history 1 SDUs or both history 2 SDUs, only one of the pair will be used when the system comes on line. (Same is true for SDUs C, D, E, and F.)
- (2) Query: ENTER Y AFTER MOUNTING A CONTROL SDU OR ENTER N TO TERMINATE RECOVERY.
 - (a) Meaning: After reading pack header, no control SDU was found.
 - (b) Response: Mount a control SDU and enter Y to continue or enter N to terminate.
- (3) Query: ENTER DEVICE ID FOR FDD IPL1.
 - (a) Meaning: Standby processor is used for LFIM. (PLD on floppy is needed.)
 - (b) Response: Mount the PLD and identify floppy location.

- (4) Query: ENTER DEVICE ID FOR SDU IPL1.
 - (a) Meaning: Standby processor is used for LFIM. Floppy disk PLD was not identified. (PLD on SDU is needed.)
 - (b) Response: Mount the PLD SDU and identify SDU location.
- (5) Query: ENTER DEVICE ID FOR LPU SBY.
 - (a) Meaning: Processor was not able to find LPU.
 - (b) Response: Enter A or B for LPU.

NOTE: Show Slide 14.

g. Recovery Messages.

- (1) Processor x is MP. Recovery Terminated.
- (2) Valid control SDU not found.
- (3) History x SDU not found.
- (4) SDU x control, last opened ddd hhmm. MP startup was ddd hhmm.
- (5) Version mismatch: SDU=va, current=wb. Recovery terminated.
- (6) Control SDU read error. Recovery Terminated.
- (7) Recovery terminated.
- (8) Proceeding with MP startup.
- (9) System time is earlier than last time on control SDU.

1H 55M

- 4. Demonstration. Take groups of students switch to demonstrate the following:
 - a. Bring controlling processor to standby: TM 11-5805-790-12-1, para 2-27a, b, & c.
 - b. Bring second processor with first processor in standby status: TM 11-5805-790-12-1, para 2-27d.
 - c. Bring controlling processor to on-line (MPLD and/or RECO): TM 11-5805-790-12-1, para 2-27e.

2H 55M

5. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective. Coach, if necessary.
 - a. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will answer written questions, study TMs and their notes.
 - b. Rotate students by roster.
 - c. Explanation to students.
 - (1) This practical exercise is divided into two parts. You will perform Part One switch initialization in the switch area. You will perform Part Two answer written questions in the classroom.
 - (2) In either part, if it is not clear what you are required to do, ask your instructor for clarification.
 - (3) When you feel confident that you can correctly perform processor start-up procedure within 30 minutes ask one of your instructors to evaluate your work. When you have answered the 10 questions, turn in your work to one of your instructors to grade your answers.
 - d. Application by students.
 - (1) In Part One, perform the processor initialization procedure as directed by your instructor.
 - (2) In Part Two, circle the correct answer or fill in the blank.
 - e. Evaluation. Part One, evaluate each student's ability to correctly perform processor start-up procedure within 30 minutes. In Part Two, grade student's answers. Student must correctly answer 7 of 10 questions.

16H 55M

SUMMARY:

You have now completed your training program on

processor start-up procedures for the message switch AN/TYC-39(A). During your future assignments, you will be required to perform processor start-up procedures as well as other tasks. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

17H

END

This document supports Task Number 113-583-2617, 113-583-2618, 113-583-2619, and 113-583-2620.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: COMSEC Procedures

LEARNING

OBJECTIVE: Action: The student will perform COMSEC start-up and initialization procedures.

Conditions: The student will be given an operational AN/TYC-39(A), fill devices, TM 11-5810-330-13, TM 11-5810-331-13, TM 11-5810-327-10, TM 11-5810-328-13, TM 11-5810-329-10, TM 11-5810-361-10, TM 11-5810-326-13, TM 11-5810-323-12, 11-5810-292-13&P, TM 11-5810-309-10 and practical exercise 260-ASIZ2/A01-LP8-PE.

Standard: Acceptable performance is achieved when the student correctly performs COMSEC start-up and initialization procedures within 20 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), Fill Devices, TM 11-5810-330-13, TM 11-5810-331-13, TM 11-5810-327-10, TM 11-5810-328-13, TM 11-5810-329-10, TM 11-5810-361-10, TM 11-5810-326-13, TM 11-5810-323-12, TM 11-5810-309-10, TM 11-5810-292-13&P, Practical Exercise 260-ASIZ2/A01-LP8-PE, Overhead Projector, and Slides.

METHODS OF

260-ASIZ2\A01-LP8

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

INSTRUCTION: Conference, Demonstration, and Practical Exercise

TIME: 8 Hours

NOTES TO INSTRUCTOR:

1. Ensure that notes are NOT taken during this class.
2. Ensure all training resources are available.
3. Evaluate students on their ability to perform the learning objective during the PE.

INTRODUCTION:

- Elapsed Time
1. In order to pass secure traffic, you must know COMSEC start-up and initialization procedures.
 2. This lesson will teach the skills, knowledge, and procedures necessary for you perform COMSEC start-up procedures with AN/TYC-39A equipment. will then practice using start-up, initialization procedures for a variety of operations, until you can correctly perform COMSEC start-up and initialization procedures within 20 minutes.
 4. Let us begin our study by looking at and briefly discussing the purpose and use of COMSEC and the related equipment that you will use in your work with the AN/TYC-39A.

BODY:

1. COMSEC - Communications Security involves procedures, material and equipment needed to provide for a secure communications network.
 - a. The AN/TYC-39(A) COMSEC works with other systems and network-compatible equipment to provide secure data and voice communications. Equipment discussed in this lesson is not unique to the AN/TYC-39A. However, only the AN/TYC-39A modes and uses will be discussed.

- b. SITE requirements for keys and equipment is the responsibility of the commander but is ultimately controlled by COMSEC custodian.
- c. If ever in doubt about a procedure refer to your COMSEC custodian for instructions or for reference TMs, KAOs, TBs, DA PAMs, etc. Your COMSEC custodian can keep you out of serious trouble by giving you the proper procedures to follow when handling COMSEC material and equipment.
- c. You are authorized to do operator PMCS on COMSEC devices. However, when any other AN/TYC-39A COMSEC maintenance, troubleshooting or modifications is required you should defer to your unit's COMSEC maintenance support element.
- e. Destruction of COMSEC material and equipment should be done in accordance with your unit's COMSEC emergency plan.

10M

NOTES: Show Slide 1. Refer students to TM 11-5810-292-13&P.

2. Fill Devices.

- a. General Purpose Tape Reader KOI-18 - Used to load keys from prepunched tape to COMSEC equipment. Can be used to load keys to a KYK-13 or KYX-15. Has no storage capability.
 - (1) Control and Indicators.
 - (2) Operation Procedures.

NOTE: Show Slide 2.

- b. Electronic Transfer Device KYK-13 - Used to load and transfer keys to a KYX-15, another KYK-13 or to compatible COMSEC equipment. Can store up to six keys. Can receive keys from KOI-18, KYX-15 or another KYK-13.
 - (1) Control and Indicators.
 - (2) Operation Procedures.

NOTE: Show Slide 3.

- c. Net Control Device KYX-15 - Used to perform Advance Remote Keying operations. Can store up to 16 keys and can be filled by a KOI-18, KYK-13 or KYX-15. When connected to COMSEC equipment, it can perform the remote keying and control functions and other key operations.

- (1) Control and Indicators.
- (2) Operation Procedures.

NOTES: Show Slide 4. Refer students to TM 11-5810-323-12.

3. Common Equipment Facility, HGF-83 TSEC/CI-7.

- a. Provides housing for COMSEC modules.
- b. Distributes cooling air for equipment in the COMSEC rack.
- c. Provides electrical interfaces.
- d. Provides overload protection through CB1 through CB5 located at top of rack.
- e. Houses the following equipment:
 - (1) Two HGX-84s.
 - (2) Two KG-83.
 - (3) Six HGX-82s.
 - (4) Forty-eight KG-82s.
 - (5) One HGX-83.
 - (6) Three KG-194s (KG-81s-old TEDs).

QUESTIONS: What is the maximum number of HGX-82/TSECs that would be used with the TSEC/CI-7 equipment rack? (ANS: The TSEC/CI-7 equipment rack would use a maximum of six HGX-82/TSECs.)

How many TSEC/KG-83s are used with the TSEC/CI-7 equipment rack? (ANS: There would be two TSEC/KG-83s used with the TSEC/CI-7.)

NOTES: Show Slide 5. Refer students to TM 11-5810-328-13.

4. HGX-84/TSEC interface control unit.

- a. Purpose - The HGX-84 provides buffering and interface between the AN/TYC-39(A) equipment in the COMSEC rack and the switch processor for:
 - (1) Command signals.
 - (2) Clock signals.
 - (3) Status signals.
 - (4) Major alarms.
- b. Two HGX-84s are provided in a redundant configuration to allow full-time availability to the switch. The Supervisor VDT displays the ICU current status in the equipment status area; this status should match the indicators on the HGX-84s.
 - (1) One HGX-84 operates on-line.
 - (2) One HGX-84 is on standby.
- c. The HGX-84 is designed to operate in four different modes. However when used in the HGF-83 rack in the AN/TYC-39A the mode plate should read MODE 1. This indicates that the HGX-84 can interface with up to 8 TEDs.
- d. Controls and indicators.
 - (1) Power switches.
 - (2) Alarm indicators.
 - (3) Function indicators.
- e. Operation procedures.
 - (1) Power-up.
 - (2) Lamp test.
 - (3) Shut down.

NOTES: Show Slide 6. Refer to TM 11-5810-331-13.

5. KG-83/TSEC Key variable generator.

- a. Purpose - Generates keys upon request to the HGX-83 or to a fill device.

- (1) Operates with the HGX-83 to provide keys electronically in response to commands from the switch processor or by an operator using controls on the HGX-83 front panel.
- (2) Can provide keys by way of front panel connectors to fill device using manual procedures.
- (3) The first KG-83 is dedicated to the HGX-83 contained in the HGF-83 rack. The second is a spare and is not electrically connected. It must be physically moved to the first KG-83 slot in order to operate.
- (4) Once the KG-83 has been initialized during start-up, it can be reinitialized at any time during normal operation.
- (5) Is on-line when the HGX-83 is extracting a key.
- (6) Is off-line during all other operations.
- (7) Is powered and wired for combined alarm.

b. Controls and indicators.

- (1) POWER switch.
- (2) POWER indicator.
- (3) Function switches.
- (4) Alarm indicators.

c. Operating Procedures.

- (1) Power-up.
- (2) Initialization.
- (3) Re-initialization.
- (4) Fill operations.
- (5) Shutdown.

NOTES: Show Slide 7. Refer students to TM 11-5810-326-13.

6. HGX-82/TSEC loop key generator/common unit.

a. Purpose - Operates, power and signal interfaces, and transfers keys with up to 8 KG-82s.

- (1) Provides the command, alarm, and status signal interfaces between HGX-84 and associated KG-82s.

- (2) Contains a battery to maintain the KG-82 keys and initialization data if primary power is interrupted.
- (3) Transfer keys by use of a fill device to the associated KG-82s.
- (4) Provides the means to operate and rekey KG-82s.

b. Controls and indicators.

- (1) POWER ON switch.
- (2) POWER ON indicator.
- (3) Battery install date.
- (4) ENABLE/ZEROIZE switch.
- (5) HGX-82 lamp test.
- (6) DPE.
- (7) Fill Connector.
- (7) Green and Red Parity indicators (two lamps)
- (8) KG-82 mode switch.

c. Operating Procedures.

- (1) Power-up.
- (2) Initialization.
- (3) Re-initialization.
- (4) Shutdown.

NOTES: Show Slide 8. Refer students to TM 11-5810-330-13.

7. KG-82 Loop Key Generator/TSEC/KG-82.

- a. Purpose - Provides loop encryption interface for dedicated lines and trunk encryption interface for CS/MS and other data trunk lines. In the HGF-83 rack can operate in three modes by changing the FUNCTION switch.

- (1) CS to MS Trunk.
- (2) MS redundant synchronization.
- (3) MS non-redundant synchronization.

b. Controls and indicators.

- (1) Busy Indicator.
- (2) Alarm indicator.
- (3) Mode Plate.
- (4) Function Selector.

(5) Mode initiate Switch.

- c. Operation procedures - KG-82 operates only when used with an HGX-82.

QUESTIONS: What type of equipment must you use with a TSEC/KG-82 when loading variables? (ANS: The HGX-82 must be used with a TSEC/KG-82 when loading variables.)

When you have initialized the TSEC/KG-83 during start-up, when can it be reinitialized? (ANS: The TSEC/KG-83 can be reinitialized at any time during normal operation.)

NOTES: Show Slide 9. Refer to TM 11-5810-327-10.

- 8. Automatic Key Distribution Center/Rekeying Control Unit HGX-83/TSEC.

- a. Purpose - The HGX-83/TSEC is used to transfer and store variables used in encrypting voice and digital data.

- (1) Transfers variables on demand.
- (2) Can use a KYK-13, KYX-15/15A to load variables.

- b. Controls and indicators.

- (1) Alarms.
- (2) Battery installation date.
- (3) Error indicator.
- (4) Indicators.
- (5) Manual mode.
- (6) Display.
- (7) Function switch used with command/address.
- (8) Power switch.
- (9) Command/address switch.

- c. Operation Procedures.

- (1) Start up.
- (2) Perform Commands: 23; 25; 57; 59; 75; 89; 91.
- (3) Shutdown.

NOTES: Show Slide 10. Refer Students to TM
11-5810-361-10.

9. TSEC/KG-194 - Trunk encryption device (Replaced KG-81).
 - a. Purpose - Performs digital data encryption/decryption in full duplex synchronous operation.
 - (1) Passes traffic at a rate of 9.6 kilobits to 13 megabits per second.
 - (2) Designed to use KYK-13, KYX-15/15A or KOI-18 to load variables.
 - b. Controls and indicators.
 - (1) POWER switch.
 - (2) FUNCTION select switch.
 - (3) Actuate switch.
 - (4) Indicators.
 - (5) Update display.
 - c. Operation Procedures
 - (1) Start-up.
 - (2) Loading.
 - (3) Update.
 - (4) Shutdown.

NOTES: Show Slide 11. Refer students to TM
11-5810-329-10.

10. Digital Subscriber Voice Terminal, TSEC/KY-68.
 - a. Purpose - Provides secure and non-secure access to switched and non-switched networks.
 - (1) Operates as a full-duplex or half-duplex voice/data subscriber terminal in the secure and non-secure modes.
 - (2) Handles 16 kilobits to 32 kilobits traffic.
 - b. Controls and indicators.
 - (1) Handset PUSH-TO-TALK switch.
 - (2) Headset PUSH-TO-TALK switch.
 - (3) Keyboard matrix.

- (4) Pushbutton.
- (5) CRADLE HOOK switch.
- (6) FUNCTION select switch.
- (7) Audio & ring volume adjust.
- (8) VARIABLE STORAGE switch.
- (9) Indicators.
- (10) Fill connector.
- (11) Battery installed date.

c. Operation procedures.

- (1) Power.
- (2) Initialization.
- (3) Place a Call.
- (4) Receive a Call.

NOTES: Show Slide 12. Refer students to TM
11-5810-309-10.

11. Dedicated Loop Encryption Device TSEC/KG-84A.

a. Purpose - The TSEC/KG-84A is used as part of a communication system to provide encryption decryption for a dedicated line. Type of operations is controlled by the system used.

- (1) Interfaces with KG-82s in the HGF-83 rack of the AN/TYC-39A.
- (2) The KG-84A can be used for local or remote operation.
- (3) Normal operation of the KG-84A is full-duplex but can be used with half-duplex or simplex operation.

b. Controls and Indicators.

- (1) Power Switch.
- (2) Power Indicator.
- (3) Initiate/Ind Test Switch.
- (4) TTY/XMT Switch.
- (5) Mode Switch.
- (6) Parity Light.
- (7) Alarm Light.
- (8) Enable/Zeroize Switch.
- (9) Full OPR Light.
- (10) X-VAR Switch
- (11) BAT Installation Date.
- (12) Fill Connector.

c. Operation Procedures.

- (1) Power Up.
- (2) Initialization.
- (3) Shutdown.

QUESTIONS: The TSEC/KG-84A is normally operated in what mode? (ANS: The TSEC/KG-84A is normally operated in full-duplex.)

2H 57M

12. Demonstration - COMSEC equipment.

a. Demonstrate operation of fill devices.

- (1) KYK-13 ETD.
- (2) KYX-15 NCD.
- (3) KOI-18 tape reader.

b. Demonstrate startup and initialization procedures.

- (1) HGF-83
- (2) HGX-84.
- (3) KG-83.
- (4) HGX-82.
- (5) KG-82.
- (6) HGX-83.
- (7) KG-84A.
- (8) KY-68 if available.

3H 57M

13. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will review TMs.

a. Explanation to students.

- (1) You will perform COMSEC start-up and initialization procedures.
- (2) When you feel confident that you can correctly perform the procedures within 20 minutes ask one of your instructors to evaluate your performance.

(7) If it is not clear what you are required to do, ask your instructor for clarification.

b. Application by students.

The student will perform COMSEC start-up and initialization procedures as directed by the practical exercise.

c. Evaluation. Evaluate students on ability to perform COMSEC startup and initialization procedures within 20 minutes.

7H 57M

SUMMARY:

You have now completed your training program on how to correctly perform COMSEC start-up and initialization procedures. During your future assignments you will be required to perform COMSEC start-up procedures as well as other procedures. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

8H

END

This document supports Task Numbers 113-609-2041, 113-583-2619 and 113-583-2621.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Normal System Shutdown

LEARNING

OBJECTIVE: Action: The student will perform AN/TYC-39(A) normal system shutdown procedures and answer written questions.

Conditions: The student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-1, TM 11-5805-790-12-3, TM 11-5805-790-12-5, practical exercise 260-ASIZ2/A01-LP9-PE.

Standard: The students will meet the learning objective when they can correctly answer at least 7 out of 10 questions within 30 minutes and when the students correctly performs AN/TYC-39(A) normal system shutdown procedures within 10 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM-11-5805-790-12-1, TM 11-5805-790-12-3, TM 11-5805-790-12-5, Practical Exercise 260-ASIZ2/A01-LP9-PE, Overhead Projector, and Slides.

METHODS OF

INSTRUCTION: Conference, Demonstration, Practical Exercise

260-ASIZ2\A01-LP9

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

TIME: 3 Hours

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
2. Ensure all equipment is operational.
3. Ensure all safety procedures and practices are followed.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.
5. At the end of class, ensure all equipment is operational.

INTRODUCTION:

- Elapsed Time
1. As a AN-TYC-39A supervisor or traffic service attendant, you will be required to know the normal system shutdown procedures for the AN/TYC-39(A) automatic message switch.
 2. This lesson will teach you the skills, knowledge, and procedures necessary for you to accomplish performing this task. You will then practice performing normal system shutdown procedures until you have demonstrated the ability to correctly perform AN/TYC-39(A) normal system shutdown procedures within 10 minutes and correctly answer at least 7 of 10 questions in 30 minutes.
 3. Let us begin our study by discussing the purpose and use of normal system shutdown.

3M

BODY:

NOTE: Refer students to TM 11-5805-790-12-1, paragraph 2-33.

1. Normal system shutdown procedures are vital to the operator or supervisor of the message switch and are performed to protect the equipment and traffic in a tactical situation. The shutdown procedure is performed in two parts: software shutdown and hardware powerdown.

a. Planned system software shutdown procedures.

NOTE: Show Slide 1.

- (1) Perform STAT MSS.
- (2) Check printout for backlogged messages.
- (3) Altroute backlogged messages to send as many messages as possible to another destination. Message diversion will be discussed in detail in later lessons.
- (4) Perform disk dry-up. Enter DRUP A which excludes input traffic but allows output traffic to be processed normally.

NOTES: Show Slide 2. Refer students to TM 11-5805-790-12-3, para 5-17a and c.

- (5) Take all subscriber channels out of service by group or by single channel using COSR command.
 - (a) Verify that channels went out of service by viewing the Channel Status Summary of the SSF or COM VDT.
 - (b) Allow sufficient time for backlogged messages to be delivered.
- (6) Cancel DRUP procedure - Enter SUPE CMD DRUP D - This cancels DRUP A and status printouts are allowed.
- (7) Enter SUPE command STAT MSS again to determine if any messages are still backlogged.
- (8) Enter other system statistics commands, if desired: STAT SYS, STAT CUM and STAT CFG. These commands enable the supervisory position to obtain printouts of equipment and traffic status.
- (9) If a DBD input file has been active using GOST, close DBD floppy using NOST command and remove floppy.

b. Power shutdown procedures.

- (1) Shut off DC-to-DC converters.
- (2) Shut off DLC circuit breakers.

- (3) Shut off individual units and modules: VDTs, LPUs, COMSEC equipment. FDDs, and SDUs.
- (4) Shut off power processors.
- (5) Shut off battery box circuit breakers.
- (6) Shut off intercoms.
- (7) Shut off environmental control units (ECUs).
- (8) Shut off DC & AC power circuit breakers.
- (10) Shut off external power sources.

QUESTIONS: When should system hardware power down procedures be performed? (ANS: After system software shutdown.)

What is the purpose of system shutdown procedures? (ANS: Shutdown procedures are performed to protect the equipment and/or traffic in a tactical situation.)

45M

NOTE: Show Slide 3. Refer students to TM 11-3805-790-12-1, para 2-36.

2. Emergency shutdown.

- a. At the power control panel, set EMERGENCY OFF switch OFF. Use only for emergency as directed by your SOP for matters such as smoke or fire conditions and enemy overrun.
 - (1) Main power circuit breaker goes off.
 - (2) DC control circuit breaker goes off.
 - (3) All DC breakers on the circuit breaker panel go off.
- b. If you perform an emergency shutdown while on-line and passing traffic, you should perform the complete power shutdown on all equipment before bringing switch back on-line.
- c. In order to recover traffic, you can perform the RECO procedure to bring switch online to previous state. Perform MPLD with DINLed disks when traffic accountability is not a concern.

QUESTIONS: When would you perform the emergency shutdown procedure? (Ans: Emergency situations as directed by SOP such as smoke or fire conditions and enemy overrun.

57M

3. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will complete the written portion of the practical exercise. Caution the students that emergency shutdown procedures are to be performed only for emergency situations as directed by your SOP.

a. Explanation to students.

- (1) During this practical exercise, you will perform normal system shutdown procedures and answer written questions about shutdown procedures.
- (2) When you feel confident that you can correctly perform AN/TYC-39(A) normal system shutdown procedures within 10 minutes, ask one of your instructors to evaluate your performance. When not in the switch you will answer 10 questions about the shutdown procedures discussed in this lesson. You must correctly answer 7 of 10 questions within 30 minutes in order to receive a GO on part 2. When completed have your instructor grade your answers.
- (3) If you have no questions, you may start your exercise by reading and following the directions in your practical exercise.
- (4) If it is not clear what you are required to do, ask your instructor for clarification.

b. Application by students.

- (1) Proceed to the training area when directed by your instructor.
- (2) Perform the procedures listed in the application portion of the practical exercise.

- (3) When completed, remove papers from both printers and sign your name on them. Your instructor will use these to evaluate your performance.
 - (3) You will use your TMs to perform each individual step.
- c. Evaluation. Evaluate each student's ability to correctly perform AN/TYC-39(A) normal system shutdown procedures within 10 minutes and answer 7 of 10 questions correctly within 30 minutes.

2H 58M

SUMMARY:

7

You have now completed your training program on AN/TYC-39(A) system shutdown procedures of the message switch. During your future assignments, you will be required to perform normal system shutdown procedures as well as other procedures. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

3H

This document supports Task Number 113-583-2621.

END

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Monitoring AN/TYC-39(A) Service Messages

LEARNING

OBJECTIVES: Action: The student will interpret received service messages and determine necessary action. The student will also answer written questions.

Conditions: The student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-2, and practical exercise 260-ASIZ2/A01-LP10-PE.

Standard: Acceptable performance is achieved when the student correctly interprets and determines necessary action for three of four service messages within 20 minutes and correctly answer 7 of 10 questions in 30 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCES

NEEDS/

REFERENCES: Operational AN/TYC-39(A) TM 11 5805-790-12-2, Practical Exercise 260-ASIZ2/A01-LP10-PE, Projector, and Slides.

METHODS OF

INSTRUCTION: Conference, Practical Exercise

TIME: 4 Hours

NOTES TO INSTRUCTOR:

260-ASIZ2\A01-LP10

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

1. Ensure all safety procedures and practices are followed.
2. Ensure all training resources are available.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.
5. At the end of the class, ensure that all equipment is operational.

INTRODUCTION:

- | | |
|-----------------|---|
| Elapsed
Time | <ol style="list-style-type: none">1. As operators and supervisors of the AN/TYC-39(A) we must have means for notifying subscribers about mistakes in Department of Defense messages. These notifications are accomplished through the use of service messages and the video display terminal (VDT) in the message switch.2. This lesson will teach you the skills, knowledge and procedures necessary for you to accomplish the task of interpreting service messages and determining necessary action. Then you will practice using the procedures until you have demonstrated the ability to correctly interpret and determine necessary action for three of four service messages within 20 minutes and answer 10 written questions within 30 minutes.3. Let us begin our study by briefly discussing the use and purpose of service messages as they are used in the AN/TYC-39(A) message switch. |
|-----------------|---|

3M

BODY:

1. Service messages.

NOTES: Show Slide 1. Refer students to TM
11-5805-790-12-2, paragraph 4-22.

- a. Automatic service messages that originate at the AN/TYC-39(A) are normally automatically computer generated.
 - (1) The traffic service (TS) operator normally has no control over the service messages sent to the subscribers.
 - (2) This is a software controlled function of the switch and all AN/TYC-39(A) automatically generated service messages originate in JANAP 128 or JANAP 128(M) with language media format AT.
 - (3) These messages undergo appropriate changes if necessary when being formatted for output/delivery to a terminal.
 - (4) Service message accountability.
 - (a) As with all other types of message, service message are stored on the SDUs. Reference/History/Journal entries are maintained on the SDUs.
 - (b) Service Messages directed to the Traffic service attendant are printed on the TS or COM LPU.
 - (c) All messages delivered to the Traffic Service Position are entered into the TS VDT Log.
 - (d) Depending on the mission and tactical situation, local SOPs may direct that a written log also be kept for service messages.
- b. Service messages are a primary tool used to ensure message accountability and to provide status, and transmission conditions or message error information to subscribers.
 - (1) Each time a message is received from a mode 2 or mode 5 subscriber a automatic service message is generated. The service message will inform the subscriber of the status of that message.
 - (3) Service messages give subscribers information such as:
 - (a) Message accepted.

- (b) Message accepted with a problem.
 - (c) Message rejected because of a reason.
 - (d) Test message or connectivity verify message.
- (4) Service messages address errors in connection with the following:
 - (a) Channel sequence number (CSN).
 - (b) Routing.
 - (c) Security.
 - (d) Channel designator.
 - (e) Station serial number.
 - (f) LMF errors.
 - (h) Precedence.
- c. The service message usually is routed to two positions:
 - (1) Traffic service position.
 - (2) Originating station routing indicator (OSRI) or service message routing indicator (SMRI) for the originating terminal line.
- d. The traffic service operator normally does not get involved with these subscriber input messages and service messages unless they are related to messages generated at the traffic service position.
 - (1) Major advantages of having service messages delivered to the TS printer is that repetitious subscriber errors can be detected and that specific messages requiring help can be easily identified.
 - (2) The TS operator may have to provide assistance to the subscriber in items such as:
 - (a) Routing or router verification.
 - (b) Next CSN.
 - (c) Security violations.
 - (2) The TS operator or switch supervisor may need to verify the switch data base for

that subscriber by looking at the subscribers line and routing classmarks:

- (a) LADD command.
 - (b) RADD command.
 - (c) LRIS command.
 - (d) DABA command.
- (3) TS operator intervention is required if a message from a directly connected AUTODIN has an error that is detected on input:
- (a) The message will be dumped to the AN/TYC-39A TS position along with a service message to traffic service with information that operator action is required.
 - (b) Since no reject service message is sent to the AUTODIN; the AN/TYC-39A TS operator is responsible for forwarding the message.
 - (c) There are some exceptions to this with a special procedure to overcome the AUTODIN rules.

QUESTION: When a message is transmitted by a mode 2 subscriber, what response does the AN/TYC-39(A) make? (ANS: The message switch automatically generates and returns a service message containing the status of the transmitted message.)

NOTE: Refer students to TM 11-5805-790-12-2, paragraph 4-22, pgs 4-45 thru 4-48.

2. Service message formats and contents. Service messages should be as non-cryptic as possible; easily understood.
- a. AN/TYC-39(A) service messages have a FL4 and U security for the R/U community and M security code with transmission control code NSH for Y community.
 - b. The precedence of the service message is usually the same as the message being serviced. In some cases this is not the rule such as: "unauthorized use of ECP."

- c. Some fields will be omitted from service messages. These omissions will depend on the type of line being serviced and the reason for the service.
- d. The index of service messages generated by the switch are listed in TM with a brief description and numbered as follows:
 - (1) S1 - S76.
 - (2) Total service messages = 76.
- e. S1-S4 are used to show service message format in JANAP generated format and ACP delivered formats for R/U and Y communities.
 - (1) Contains description of fields and give sample message formats.

NOTE: Show Slide 2.

- (2) S-1 describes fields for an automatically generated JANAP 128 formatted message used for R/U community traffic.
- (3) S-2 describes fields for an automatically generated JANAP 128 (Modified) formatted message used for Y community traffic.
- (4) S-3 describes fields for an outputted reformatted service message in ACP 127 for R/U community traffic.
- (5) S-4 describes fields for an outputted reformatted service message in ACP 127 (Modified) for Y community traffic.
- (6) The AN/TYC-39A does have specific routers that relate to the switch's service message designators. It can be determined whether or not the message was automatically generated by the switch processor or sent from the traffic service position.

NOTE: Show Slide 3.

- (a) RUXXCSD/UUXXCSD OSRI - The first four letters identify the specific switch. All automatically generated service messages

(processor generated) are identified at the fifth, sixth, and seventh character by the use of CSD for R and U communities.

- (b) YEXXSVD OSRI - The first four letters identify the specific switch. All automatically generated service messages are identified at the fifth, sixth, and seventh character by the use of SVD for Y community.

NOTE: Show Slide 4.

- (c) RUXXCSEA/UUXXCSEA/YETTSVA - The RI identifies the receiving traffic service position when a service message has been automatically generated by the automatic data processor (ADP). CSA is for the R and U community and SVA for the Y community.

NOTE: Show Slide 5.

- (d) RUXXCST/UUXXCST/YETTSVT (OSRI) - The first four characters identify the specific switch. The last three positions of the router indicate that the message was NOT an automatically generated message but came from the traffic service operator whether it is a narrative message or service message. CST is for the R and U community and SVT for the Y community.

NOTES: Pick one or two of the service message subparagraphs and go over how to read them.

- (e) S5 - S76 have a more indepth description, remarks, and reason for service in the TM reference paragraph and should be consulted for description of the error, if any, remarks, and reason for service. These subparagraphs will help pinpoint causes and actions to be taken.

QUESTIONS: What does OSRI mean? (ANS: Originating stations routing indicator.)

What does CSD in the OSRI indicate? (ANS: R or U community automatically generated service message designator.)

How many service messages are used with the AN/TYC-39(A)? (ANS: Total of 76 service messages.)

3. AN/TYC-39(A) reason codes (RCs) and mnemonic codes
 - The AN/TYC-39(A) uses a system of codes to transfer a large amount of information in an abbreviated form to message switch personnel.
 - a. Some of these codes will appear along with service messages and some will appear when performing other switch functions.
 - b. They will appear on the Line printer unit (LPU) and VDT screens.

NOTES: Refer students to TM TM 11-5805-790-12-2, paragraph 4-8, pages 4-10 thru 4-12.

- c. These RCs are found in alphanumeric form. The meaning to the code is located in the AN/TYC-39(A) technical manuals. These codes all have a numerical octal form but in some cases they also have a mnemonic code to assist the operator memory.
- d. Some of the areas in the message switch that reason codes and mnemonics are used with are:
 - (1) Service messages such as:
 - (a) DUP = Duplicate CSN.
 - (b) ZID = Channel check.
 - (c) ZFX = Channel sequence number out of sequence.
 - (2) Traffic service VDT such as:
 - (a) INV SEC = Security not valid or does not match message community.

- (b) INV TCC = Invalid transmission control code.
 - (c) 160 S = Duplicate SPECAT field.
- (3) Traffic printouts such as:
- (a) (DAB) = Outstanding answer back.
 - (b) (HPD) = High precedence non-CRITIC delivered.
- (4) Fault printouts.
 - (5) Close (CLOS) printouts.
 - (6) RESTART printouts.

QUESTION: What is the purpose of RCs? (ANS: The AN/TYC-39(A) uses a system of RCs to transfer a large amount of information in an abbreviated form to switch personnel.)

1H 57M

10. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will answers written questions in the practical exercise or study their notes while waiting for reassignment.
- a. Explanation to students.
- (1) During the practical exercise, you will correctly interpret received service messages and determine necessary action.
 - (2) When you feel confident you can correctly interpret and determine necessary action for three of four service messages within 20 minutes, ask one of your instructors to evaluate your performance. You will also correctly answer 7 of 10 written questions within 30 minutes.
 - (3) If it is not clear what you are required to do, ask your instructor for clarification.
 - (4) If you have no questions, you may start your practical exercise.

- b. Application by students.
 - (1) Proceed to the training site when directed by the instructor.
 - (2) Perform the steps as they are sequenced in the application portion of the practical exercise.
 - (3) You will use your TMs to complete each individual step.
 - (4) While waiting turn in switch, perform written portion of practical exercise.
- c. Evaluation. Evaluate each student's ability to correctly interpret received service messages and determine necessary action on three of four service messages within 20 minutes and correctly answer 7 of 10 questions.

3H 57M

SUMMARY:

You have now completed your training on interpreting received service messages and determining necessary action. During your future assignments, you will be called upon to operate the AN/TYC-39(A) as well as other automatic switches. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

4H

END

This document supports Task Number 113-583-2616.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: Traffic Service Attendant Operations

LEARNING

OBJECTIVE: Action: The student will compose and transmit messages, print VDT screen, and perform traffic service data file (TSDF) operations from the VDT and answer written questions.

Conditions: The student will be given an operational AN/TYC-39(A), TM 11-5805-790-12-2, practical exercise 260-ASIZ2/A01-LP11-PE.

Standard: Acceptable performance is achieved when the student correctly composes and transmits messages, prints VDT screen, and performs TSDF operations within 30 minutes and correctly answers 7 of 10 questions within 30 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS/

REFERENCES: Operational AN/TYC-39(A), TM 11-5805-790-12-2, and Practical Exercise 260-ASIZ2/A01-LP11-PE, projector, slides.

METHODS OF

INSTRUCTION: Conference, Practical Exercise

TIME: 10 Hours

260-ASIZ2\A01-LP11

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

NOTES TO INSTRUCTOR:

1. Ensure all training resources are available.
2. Ensure all safety procedures and practices are followed.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.

INTRODUCTION:

- Elapsed Time
1. As the traffic service operator and supervisor of the automatic message switch AN/TYC-39(A) you will be required to know many traffic service functions. During this lesson instruction will be give on composing and transmitting messages, performing traffic service data file (TSDF) operations, and printing VDT screens to line printer unit (LPU).
 2. This lesson will teach the skills, knowledge, and procedure for you to accomplish these tasks. You will then practice these procedures until you have demonstrated the ability to correctly compose a service message and transmit into the system, output screen to LPU, perform TSDF store, read, modify, and delete operations within 30 minutes. You will also answer 10 written questions within 30 minutes.
 3. Let us begin our study by briefly discussing the traffic service display areas.

3M
BODY:

NOTE: Show Slide 1. Refer students to TM 11-5805-790-12-2, paragraphs 4-6 and 4-7.

1. Traffic Service Display. Since traffic service operations on COM and TSF display are the same except for log entries, this lesson will discuss traffic service display only.
 - a. 25 lines, 80 characters per line.

- b. System Control Line - Line one gives status and operating modes of the VDT. Most important field to watch while performing TS operations:
 - (1) Field 4 - Operating Mode.
 - (2) Field 10 - Query Response.
 - (3) Field 11 - Active Query.
- c. Traffic Service Control Area - Line two gives information on the current message status. Most important fields to watch while performing TS operations.
 - (1) Field 2 - EDTQ=nn/will be discussed in next lesson.
 - (2) Field 3 - EXP/Expecting Operator Response.
 - (3) Field 4 - INP=ACK or INP=NAK/System Response.
 - (4) Field 5 - Data- composed or edited message. P=Presedence/aaaaaaa=Serial number/LL=LMF/ssss=Station number
 - (5) Field 6 - Reason Code.
 - (6) Field 7 - TSDF#=nnn eeee/TSD File Information.

NOTE: Show Slide 2. Refer students to TM 11-5805-790-12-2, paragraphs 4-9.

- d. The bottom 18 rows are used to compose and edit messages.
 - (1) Home position is the starting point for TSF editing, composing, and command entry - Line 8.
 - (2) Composing (writing full message) - the last 18 rows are available.
 - (3) Editing - lines 8, 9, 10 are available for editing. Message being edited is displayed in bottom 15 rows. Editing procedure will be discussed in greater detail in next lesson.

NOTE: Show Slide 3.

- (4) Abbreviated header is used on all messages sent from the traffic service position. Contains:

- (a) Precedence.
- (b) Language media format (LMF)
- (c) Classification.
- (d) Content indicator code.
- (e) Transmission release codes (optional)
- (f) SPECAT code (optional)
- (g) Routing indicators
- (h) End of router indicator.

- e. Log entry display - will be discussed in another lesson.

NOTE: Refer students to TM 11-5805-790-12-2, paragraphs 4-13.

- f. VDT function keys.

- (1) ACK.
- (2) YES.
- (3) ACKT.
- (4) DISM.
- (5) MODE.
- (6) NO.

NOTE: Refer students to TM 11-5805-790-12-2, paragraphs 4-14.

20M

- 2. Receive messages - Messages will be printed at the traffic service or COM LPU. The SYS-LOG in the AUTO mode will display on the VDT a log of messages delivered to the printer. This SYS-LOG screen and AUTO mode will be discussed in more detail in next lesson.

NOTE: Refer students to TM 11-5805-790-12-2, paragraph 4-16.

22M

- 3. Initiate and transmit a message - allows TS operator to compose a message and input it into the system.

- a. Change mode query.

Depress MODE key repeatedly until the active query field of the system control partition displays MODE = VDT-SYS.

- b. Enter VDT-SYS mode.

NOTE: Show Slide 4.

- (1) Depress YES key to allow VDT to enter this mode.
- (2) Expecting field response displays EXP=SOM (start of message).
- (3) Use ERASE PAGE key to clear screen before typing message.

c. Type in message.

NOTE: Show Slide 5.

- (1) Type in message and locate cursor just after the NNNN if one page.
- (2) If message requires more than one screen, type in enough text to fill the screen, locate cursor after the last character and press XMIT key to transmit section of message.
 - (a) Expecting response field will display EXP=WTB.
 - (b) After section transmission is done field will then display EXP=MID.

d. Transmit final screen of message.

- (1) Place cursor after the NNNN
- (2) Depress XMIT key to transmit completed message.
- (3) The expecting field will display EXP=WTB and then EXP=DIS.
- (4) If message is accepted the system response field will display INP-ACK.
- (3) If message is not accepted the system response field will display INP-NAK along with a reason code stating why the message was rejected.

e. Discard message in process - screen does not display INP-ACK or INP-NAK. EXP field should still read SOM.

- (1) To discard a message before transmitting it, depress DISM key. The query and function key fields display: ? :DISCRD EDT MSG FK4/DISM Y.

- (2) Depress YES key to discard the message.
The query and function key fields
display: Y:DISCRD EDT MSG FK2/YES Y.
- (3) Depress NO key to ignore discard query
and continue processing the message.
The query and function key fields
display: N:DISCRD EDT MSG FK6/NO Y.

NOTE: Show Slide 6.

- f. Initiate discard (DISM) of transmitted
message - INP=ACK or NAK. The query and
function key fields display: ?:DISCRD EDT MSG
FK4/DISM Y.
- g. Discard message. The query and function key
fields display: Y:DISCRD EDT MSG FK2/YES Y.
- h. Critical - DO NOT leave this mode or any
other TS operational mode with EXP=DISM still
on screen. This will interfere with other
modes. Leave VDT=SYS only when EXP=SOM.

NOTE: Refer students to TM 11-5805-790-12-2,
paragraph 4-17.

- 4. Print VDT-displayed messages on LPU. Prints out
the current contents of the unprotected portion of
the VDT screen such as composed message, edited
message, or information that has been obtained
from TSDF files using TSD-GET.
 - a. Change mode query.
 - (1) Depress MODE key repeatedly until the
Active Query field displays:
MODE=VDT-LPU. The query and function
key fields display: ?:MODE=VDT-LPU
FK5/MODE Y.
 - (2) Enter VDT-LPU mode. Depress YES key to
enter VDT-LPU.

NOTE: Show Slide 7.

- (a) The query and function key field
display: ?:MODE=VDT-LPU FK2/YES Y.
- (b) Operating Mode field displays: VDT-
LPU.

- (c) Expecting response field displays:
EXP=CMD.
- (3) Type in message and locate cursor just after the last character. If message is already on the screen place cursor after the last character to be printed and depress the XMIT key.
- (4) Transmit message to LPU. Depress XMIT key to start printing.
 - (a) Expecting response field displays:
EXP=WB.T.
 - (b) When printing is done, expecting response field displays: EXP=CMD.

NOTE: Refer students to TM 11-5805-790-12-2, paragraph 4-18.

- 5. Store a message in the TSDF. This mode allows messages to be stored on the TSDF on the control SDU. Does not verify message format. Can be also be used to store information other than messages. The first line of message or file can contain a descriptive title for easy identification. This ID line would be erased before sending message into system. The second line would contain the text of the message or file.

- a. Change mode query.

Depress MODE key repeatedly until the active query field displays: MODE=TSD-PUT. The query and function key field display:
?:MODE=TSD-PUT FK5/MODE Y.

NOTE: Show Slide 8.

- b. Enter TSD-PUT mode.

Depress YES key to enter TSD-PUT mode.

- (a) The query and function key fields display: Y:MODE=TSD-PUT FK2/YES Y.
- (b) Operating mode field display
TSD-PUT.
- (c) Expecting response field displays: EXP=CMD.

- (d) The TSDF is opened and the TSD information field displays: TSDF=nnn (nnn=numbers).
- c. Type in message. Locate cursor just after the last character on the screen.
- d. Transmit message to TSDF.

Depress XMIT key to store message on disk.

- (a) Expecting response field displays: EXP=WBT, then: EXP=CMD.
 - (b) Active query field displays: ?MORE.
 - 1. If more data is to be added to the same TS data file, depress YES (more than one page). Use ERASE PAGE key to clear the screen.
 - 2. If no more data is to be added press NO key.
 - a. Expecting field displays: EXP=CMD.
 - b. The TSD information field displays: TSDF=nnn (nnn is the number next available).
 - e. Do NOT leave this mode with ?MORE query active.
6. Read a message from the TSDF. The TSD GET mode allows you to read entries from the TSDF on the control SDU. The data is read one screen at a time into the unprotected portion of the VDT screen.
- a. Change mode query.

Depress MODE key repeatedly until the Active Query field displays: MODE=TSD-GET. The query and function key fields display ? :MODE=TSD-GET FK5/MODE Y.

- b. Enter TSD-GET mode.

- (1) Depress YES key to enter TSD-GET mode.

NOTE: Show Slide 9.

- (a) The query and function key fields display Y:MODE=TSD-GET FK2/YES Y.
- (b) Operating Mode field displays: TSD-GET.
- (c) Expecting response field displays: EXP=NUM.
- (d) The TSDF is opened and the TSD information field displays: TSDF=000.

- c. Select message to be displayed.

Type in the number of TSDF entry you wish to display.

- d. Read message from disk.

Depress XMIT key.

- (a) While message is being read, expecting response field display: EXP=WTB.
- (b) The TSD information field display: TSDF=nnn which is the TSDF entry number you typed in.
- (c) When message reading is done, EXP=CMD.
- (d) ? MORE

1. Press YES if more screens are in this file.
2. Press NO if no more data needs to be read from this file. Expecting Response Field will read EXP=NUM and TSDF=000.

NOTE: Refer students to TM 11-5805-790-12-2, paragraph 4-20.

7. Modify existing message in the TSDF. Allows modification of existing entries in the TSDF. This should only be used for small revisions.

- a. Change mode query.

Depress MODE key repeatedly until the Active Query field displays: MODE=TSD-MOD. The query and function key fields display ? :MODE=TSD-MOD FK5/MODE Y.

- b. Enter TSD-MOD mode.

Depress YES key to enter TSD-MOD mode.

NOTE: Show Slide 10.

- (a) The query and function key fields display Y:MODE=TSD-MOD FK2/YES Y.
- (b) Operating Mode field displays: TSD-MOD.
- (c) Expecting response field displays: EXP=NUM.
- (d) The TSDF is opened and the TSD information field displays: TSDF=000.

- c. Select message to be modified. Type in TSDF message number to be modified.

- d. Read message from disk.

Depress XMIT key.

- (a) While message is being read, expecting response field display: EXP=WB.T.
- (b) The TSD information field display: TSDF=nnn.
- (c) When message reading is done EXP=CMD.
- (d) ?MORE is blinking at this time, but if the text on the screen is to be modified DO NOT answer the MORE query at this time.

- e. Modify message on screen.

- f. Write message back to TSDF.

- (1) Press XMIT key.

- (a) EXP=WB.T.

- (b) When writing is done, expecting response field display: EXP=CMD.
- (c) If more screens for the same file require modifying press YES.
- (d) If not press NO. Expecting Response field will display EXP=NUM and TSD information field will display TSDF=000.

9. Delete a message from the TSDF.

a. Change mode query.

Depress MODE key repeatedly until the Active Query field displays: MODE=TSD-DEL. The query and function key fields display ? :MODE=TSD-DEL FK5/MODE Y.

b. Enter TSD-DEL mode.

Depress YES key to enter TSD-DEL mode.

NOTE: Show Slide 11.

- (a) The query and function key fields display Y:MODE=TSD-DEL FK2/YES Y.
- (b) Operating Mode field displays: TSD-DEL.
- (c) Expecting response field displays: EXP=NUM.
- (d) The TSDF is opened and the TSD information field displays: TSDF=000.

c. Select message to be deleted. Type in number of TSDF entry to be deleted.

d. Read message from disk.

Depress XMIT key.

- (a) While message is being read, expecting response field display: EXP=WB.T.
- (b) The TSD information field display: TSDF=nnn.
- (c) When message reading is done, expecting field displays: EXP=CMD.

- (d) Active query field display: ?
CONFIRM.
- (e) Message is display on screen.

e. Delete message on screen.

- (1) If this message is to be deleted, press YES key.
- (2) If this message is not to be deleted, press NO key.

1H 57M

9. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will complete the written portion of the practical exercise.

a. Explanation to students.

- (1) During this practical exercise, you will practice composing a service message and transmitting it into the system, printing VDT screen, performing TSDF store, read, modify, and delete operations. When you feel confident you can correctly perform these traffic service operations within 30 minutes, ask one of your instructors to evaluate your performance. You will also correctly answer 7 of 10 written questions within 30 minutes.
- (3) If you have no questions, you may start your exercise by reading and following the procedures listed in your practical exercise.

b. Application by students.

- (1) Proceed to the training area when directed by your instructor.
- (2) Perform the steps as they are sequenced in the application portion of the practical exercise.
- (3) While waiting turn in switch, perform written portion of practical exercise.

- c. Evaluation. Evaluate each student's ability to correctly compose and transmit a service message, print VDT screen, perform TSDF store, read, modify, and delete operations within 30 minutes and correctly answer 7 of 10 questions within 30 minutes.

9H 57M

SUMMARY:

You have now completed your training program on correctly composing and transmitting messages, printing VDT screen, and performing TSDF operations. During your future assignments, you will be required to perform these functions as well as other procedures used to operate the message switch. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

10H

END

This document supports Task Number 113-583-2616.

U.S. ARMY SIGNAL CENTER AND FORT GORDON
Fort Gordon, Georgia 30905-5180

LESSON PLAN

TITLE: On-Line Pilot Edit of a Message.

LEARNING

OBJECTIVES:	<u>Action:</u>	The student will edit messages contained in AN/TYC-39A edit queue and answer written questions.
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Conditions: The student will be given an operational AN/TYC-39A, TM 11-5805-790-12-2, and practical exercise 260-ASIZ2/AO1-LP12-PE.

Standard: Acceptable performance is achieved when the student correctly performs pilot header editing procedures for 3 of 4 messages within 20 minutes and correctly answers 7 of 10 questions within 30 minutes.

SAFETY

CONSIDERATIONS: There are no safety considerations for this lesson.

RISK

ASSESSMENT: Low.

RESOURCE

NEEDS /

REFERENCES: Operational AN/TYC-39(A), TM 11-5805 790-12-2, Practical Exercise 260-ASIZ2/A01-LP12-PE, overhead projector, and slides.

METHODS OF

INSTRUCTION: Conference, Practical Exercise

TIME: 5 Hours

NOTES TO INSTRUCTOR:

260-ASIZ2\A01-LP12

1

APPROVAL DATE: 17 APR 98

DEVELOPER: MS SULLIVAN

DIV. CHIEF: Jack P. Rendon

1. Ensure all training resources are available.
2. Ensure all safety procedures and practices are followed.
3. Ensure all equipment is operational.
4. Evaluate students on their ability to perform the learning objective during the practical exercise.
5. At the end of the class, ensure all equipment is operational.

INTRODUCTION:

Elapsed
Time

1. As the operator/supervisor of the AN/TYC-39(A) message switch, it is mandatory that you know how to process traffic under various work load conditions as required by the site SOP.
2. This lesson will teach you the skills, knowledge, and procedures necessary for you to accomplish the task of pilot header editing procedures in order to retransmit messages from the AN/TYC-39(A). You will then practice using the procedures until you can successfully demonstrate the ability to correctly perform editing procedures within 20 minutes. You will answer 10 questions about traffic service procedures within 30 minutes.
3. Let's begin our study by briefly discussing the purpose and uses of pilot edit procedures.

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BODY:

1. Pilot edit procedure allows the operator to retransmit messages into the system by correcting message headers. The messages that the AN/TYC-39A originally attempted to deliver will be printed out on the traffic service attendant's line printer and placed in edit queue for assistance in getting the message on its way.

- a. The term "EDIT Q" shall refer to any traffic that has been routed by the message switch to the TSF video display terminal (VDT) or COM VDT for message editing. The traffic service (TS) operator may have to correct message headers for subsequent retransmission.
- b. The TS operator, after completing editing of the message, will then retransmit with a correct header (pilot header) as opposed to normal traffic which has originated from a subscriber or from the message switch itself and handled automatically.
- c. Even though the message switch normally handles messages automatically, there are some instances where it cannot. Traffic Service editing of a message may be necessary in some situations such as the following:
 - (1) Message originated at a directly connected AUTODIN switch and was dumped to the AN/TYC-39A traffic service edit queue for assistance. The message switch cannot reject this type of message.
 - (2) Header editing - Subscriber has attempted to send a message with an incorrect header. The incorrect header may contain one or more of the following errors.
 - (a) Invalid routing field.
 - (b) Invalid security field.
 - (3) Another reason for editing: a message has been retrieved from SDUs and placed in edit queue and needs to be sent to specific destinations.
 - (a) Maybe the destination received a garbled message and requested that the message be retrieved from your switch's SDUs and retransmitted.
 - (b) The original message cannot be sent back into the system with the original header; therefore, you would edit or pilot header the message.

- d. CRITIC messages are dumped to the traffic position, but will only allow a fixed format header of "WW YEKAAH." No changes are allowed to header or text of message.
- e. Editing of message text on any type message in edit queue is not allowed.

QUESTIONS: What types of messages do not allow changing/editing of the header? (Ans: CRITIC)

Which VDTs may contain the messages to be edited? (Ans: TSF or COM VDT)

What types of edit queue messages allow editing of texts? (Ans: None)

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NOTE: Show slide 1. Refer students to TM 11-5805-790-12-2 paragraph 4-10 PAGE 4-17.

2. Log Entry Display

- a. If no messages are in edit queue the AUTO mode can still be entered. At the TSF VDT, the AUTO mode will enter SYS-LOG instead of SYS-EDT. At the COM VDT, AUTO mode will enter SYS-SUM.
- b. The SYS-LOG screen will display log entries on the bottom 15 rows.
- c. It will contain a log of messages that have been delivered to the printer. This gives you a short description of the message.
- d. This LOG screen may also be printed by using VDT-LPU operating mode.

QUESTIONS: What part of the TSF VDT will display the SYS-LOG? (Ans: The bottom 15 rows)

NOTE: Show slide 2. Refer student to TM 11-5805-790-12-2, paragraph 4-23, Pg 4-123.

3. VDT directives.

- a. VDT directives are made up of four characters: & (ampersand) followed by three letters. Always type in directives from the cursor home position, then depress XMIT key. Especially helpful when in the COM mode and logged on as TS operator. Allows TS operator to perform one SUPE command or specific directives. May also be used at TSF VDT to assist supervisor.
- b. The system response is always displayed in the system control area: row 1, fields 8 and 9.
- c. &CAN - This directive cancels the message you are editing after it has been rejected by the system.
 - (1) Allows the operator to correct the message without having to discard it and retrieve it off-line.
 - (2) Each time the edit parameters are either ACKed or NAKed, you can use this directive to allow message to be edited again.
- d. &LGN - Prevents the queuing of logs. Used during combined traffic service and supervisory operation to stop the log queue since the logs are not displayed.
- e. &LGY - Restores the log queue after you have stopped it with the &LGN directive.
- f. &SUP - Allows the system to accept the next operator command input (using XMIT key) as a supervisory command when the VDT screen is in combined or traffic service modes.

QUESTIONS: What VDT directive prevents the queuing of logs? (Ans: &LGN)

- 4. Pilot editing message with successful retransmission of message.

NOTE: Show slide 3. Refer students to TM 11-5805-790-12-2 paragraph 4-8.

- a. Check edit queue field: row 2, Field 2.

- (1) The number in the edit field of the traffic service control partition will be between 00 and 99 or maximum (MX).
- (2) If the number is greater than 99, the field will read MX until the messages drop to 99 or below.
- (3) If the number in edit queue field is 0, then no messages need editing.
- (4) If messages are in edit queue, depress the FUNCTION key 5/MODE repeatedly until AUTO mode appears in the active query field (field 11, row 1). Press Yes to enter the mode.
- (5) When messages are in edit queue, the operating mode response field 4, row 1 will display SYS-EDT and will enter into that mode.
- (6) The expecting response field 3, row 2 displays EXP = CMD.
- (7) The bottom 15 rows will display a message control block (MCB) and 14 lines of a message to be edited. This area cannot be changed. This MCB and message information should help determine if header correction is possible. A copy of the message will also be output to the traffic service LPU.

NOTE: Show Slide 4. Refer students to TM 11-5805-790-12-2 paragraph 4-9.

b. Type new header using abbreviated header format discussed in previous lesson.

- (1) Community, LMF and other header parameter should be taken from the MCB and printed message, if possible. LMFs should match but exceptions are allowed on outputs. See para 4-9 for list of allowed LMFs during editing of messages.
- (2) The routing indicators for which the message is destined will be normally taken from format line 2 (FL 2) and MCB of the displayed message.
- (3) Information contained in the MCB and FL2 will not be changed unless directed by proper authority.

- (4) Editing of a message is performed only for header portion and only at the top three rows of the bottom 18 rows - rows 8, 9, and 10.

NOTE: Refer student to TM 11-5805-790-12-2, paragraph 4-15d.

- (5) With cursor in home position, type in the abbreviated pilot header: community/message format, header parameters, and any applicable routing indicators (RIs), followed by the end of routing (EOR) symbol. Locate cursor just after the EOR. Message can be transmitted or discarded before transmission at this time.

NOTE: Refer student to TM 11-5805-790-12-2, paragraph 4-15e.

c. Transmit message.

- (1) Depress XMIT to transmit message.
- (2) The expecting response field of the traffic service control partition displays: EXP = WBT followed by EXP = DIS.
- (3) When the pilot header is valid and the system can process the message, the system response field of the traffic service control partition displays: INP = ACK.
- (4) Proceed to step h to initiate message discard (DISM) after transmission.

NOTE: Show Slide 5.

d. Discard message after successful transmission: INP=ACK.

- (1) Depress FUNCTION key 4 (DISM) in response to EXP = DIS. The active query field of the system control partition displays: ?: DISCRD EDT MSG FK4/DISM Y.
- (2) Depress FUNCTION key 2 (YES). System response: Y:DISCRD EDT MSG FK4/DISM Y.

- (3) If another message is queued for edit, then it will be displayed and the procedure begins at step c.
- (4) If another message is not queued, the AUTO mode will automatically change from SYS-EDT to SYS-LOG.

QUESTIONS: What state/mode will the AUTO MODE be when no messages are in edit queue? (Ans: SYS-LOG)

What will indicate a successful transmission of a message? (Ans: INP=ACK)

- 5. Pilot editing message with unsuccessful retransmission of message: INP = NAK with reason code (step 4-15e).

NOTE: Show Slide 6. Refer student to TM 11-5805-790-12-2, paragraph 4-8, Pg 4-10 and 4-11 for reason codes.

- a. If a pilot header has been completed but INP = NAK, the message may still be reedited and retransmitted the system. Along with the INP=NAK one or more reason codes will be displayed. If the reason code shows that the pilot header contained correctable operator errors perform the following steps:

NOTE: Refer student to TM 11-5805-790-12-2, paragraph 4-15f.

- (1) Place cursor in home position.
- (2) Type in &CAN (VDT directive).
- (3) Depress XMIT key.
- (4) The screen will clear and the same message will be placed back into edit queue. Expecting response field will display: EXP = CMD.
- (5). Type in header again, place cursor after EOR symbol, and press XMIT.
- (6) If header is properly entered, INP=ACK will appear. Perform steps h and i to discard transmission of valid message.

- b. The reason code may show correction is not possible. In this case DISM message.

- (1) When using DISM procedure with an INP=NAK, the message will no longer be in the Edit queue.
- (2) The TS operator should ensure that a service message is sent to the originator of the message informing them that correction is not possible at the switch.

QUESTIONS: What is the systems response when the traffic service operator attempts to edit and retransmit a message with an incorrect message header format line? (ANS: System will respond with a NAK and provide a reason code.)

What field and row of the traffic service VDT will reason codes be displayed? (Ans: Row 2, field 6)

NOTE: Show slide 7. Refer student to TM 11-5805-790-12-2, paragraph 4-10.

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6. Practical exercise. During the practical exercise, observe the students on their ability to perform the learning objective; coach, if necessary. Have two students work together on equipment during the practical exercise. Students awaiting or having completed hands-on training will complete the written practical exercise.
 - a. Explanation to students.
 - (1) During the practical exercise, you will practice performing editing messages queued for editing from the VDT.
 - (2) When you feel confident you can correctly perform pilot header edit procedures within 20 minutes, ask one of your instructors to evaluate your performance. You must also correctly answer 7 of 10 questions within 30 minutes.
 - (3) If you have no questions, you may start your exercise by reading and following the directions in your practical exercise.

- b. Application by students.
 - (1) Proceed to the training site when directed by your instructor.
 - (2) Perform the steps as they are sequenced in the application portion of the practical exercise.
 - (3) You will use your TMs to perform each individual step.
- c. Evaluation. Evaluate each student's ability to correctly perform pilot header editing procedures within 20 minutes and correctly answer 7 of 10 questions within 30 minutes.

4H 57M

SUMMARY:

You have now completed your training program on-line pilot edit of a message for the AN/TYC-39(A). During your future assignments, you will be required to perform this procedure as well as many other procedures required to operate automatic switches. With the skills and knowledge learned during this training session, you will be successful in accomplishing this task.

5H

END

This document supports Task Number 113-583-2616.